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By Mr. J. WHITEHEAD

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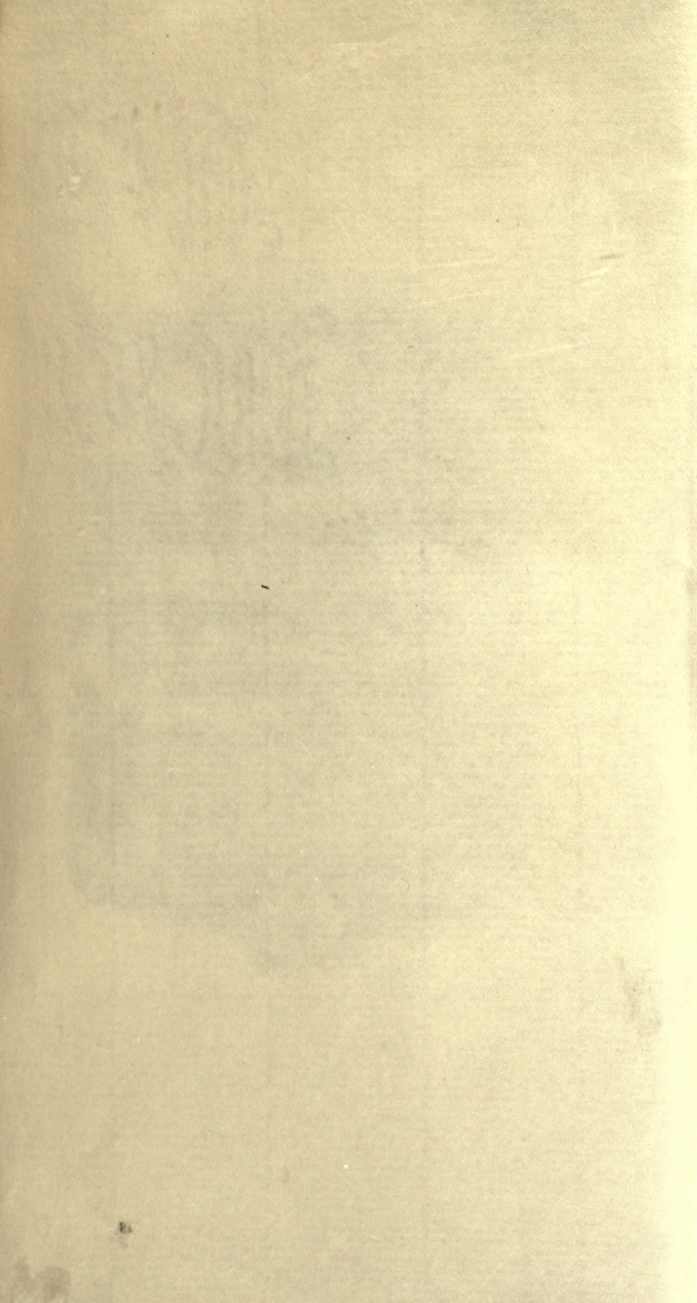
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MR JOHN BIGLAND,

Author of "Letters on History."

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LETTERS
ON
NATURAL HISTORY:

EXHIBITING A VIEW OF
THE POWER, WISDOM, AND GOODNESS
OF

The Deity,

SO EMINENTLY DISPLAYED IN THE
FORMATION OF THE UNIVERSE,
And various Relations of Utility which inferior Beings have to the
HUMAN SPECIES.

CALCULATED PARTICULARLY FOR THE USE OF SCHOOLS,
And young Persons in general of both Sexes; in order to impress
their Minds with a just Idea of its great Author,

ILLUSTRATED BY UPWARDS OF ONE HUNDRED ENGRAVED
SUBJECTS APPLICABLE TO THE WORK.

BY

JOHN BIGLAND,

Author of "Letters on Universal History," "A Geographical and
Historical View of the World," &c. &c.

SECOND EDITION.

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AND SHARPE, POULTRY.

1810.

THE FIELD

NATURAL HISTORY

JAMES CUNDRE, PRINTER,
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PREFACE.

THE study of nature is the basis of religion ; and in the primitive ages of the world, previous to the epoch of revelation, mankind had no other guide to direct them to a knowledge of the existence and attributes of the Deity, than the contemplation of his works. These, indeed, exhibited such evident proofs of his power, his wisdom, and his goodness, as were sufficient to convince rational creatures that a self-existent and infinite Being was the source and origin of all existence. This St. Paul so well understood that he condemns the Gentiles, because, after having recognized the Supreme Being in the works of the creation, they neglected to worship him, and considers them as inexcusable ; “ Because,” says he, “ the invisible things of Him from the creation of the world are clearly seen, being understood by the things that are made, even his Eternal Power and Godhead.”

After the decision of so great an authority, the propriety of introducing the study of natural history, into the system of juvenile education, can scarcely be called in question. It is indeed of the utmost importance to exhibit to the

youthful mind a view of the wonderful works of God, in order to inspire exalted notions of his essence, his attributes, and his agency, in the formation and disposition of the universe. This study is also both easy and entertaining, and appears congenial to the nature of man, in every stage of his life. The infant, on his first entrance into life, is naturally led to employ his opening faculties in observing the exterior appearances of the things which he perceives around him; and as soon as he has acquired the use of speech, he desires to be informed of their qualities and uses. When grown to maturity, he sees himself placed in a boundless amphitheatre, filled with an immense variety of objects, which solicit his attention; but, through a want of previous instruction, is often lost and confounded in the magnificence and multiplicity of those scenes which nature presents to his view.

That some knowledge of the system of nature is necessary to *all ranks* of people, is a truth that cannot be contested. The gentleman, the tradesman, the farmer, the mechanic, ought to have such a general acquaintance with this science, as may give him an exalted idea of the Creator of the universe, or some general information of those parts of the animal, vegetable, and mineral kingdoms, which furnish articles of important utility, in regard to food and clothing, manufactures and commerce. Without something

of this kind of knowledge, a person must often betray his ignorance and expose himself to ridicule.

The greatest princes and philosophers have not thought the study of natural history unworthy their attention. Solomon, as the scripture informs us, “spake of trees, from the cedar tree that is in Lebanon, even to the hyssop that springeth out of the wall: he spake also of beasts, and of fowl, and of creeping things, and of fishes.” Aristotle also wrote largely on these subjects: the most magnificent and powerful of the kings of Israel, and the prince of the Grecian philosophers, made the knowledge of nature one of the principal objects of their pursuit.

The best mode of communicating useful instruction is to render it entertaining; and youth seldom find any thing agreeable that appears in the form of a task. Systematic arrangements, however advantageous they may be to the professed naturalist, tend more frequently to embarrass than to inform the juvenile student, or the common reader. Various systems have been formed by naturalists, each of which has had its adherents; while by others, it has been exploded as too close or too restrictive, too simple or too complex. The cause of this defect, and the difficulty of forming complete systematic arrangements is, that nature has not attached so much importance to these distinctions as they have done, nor made them the uniform rules of her

operations. Buffon, the great philosophical painter of nature, conscious of the brilliant energies of his own expansive mind, affects to soar above what he calls the trammels of system, and despises all artificial arrangements, saying, that "all our families and generations are made by ourselves, and not by Nature, which knows nothing of these distinctions. The system of Linnæus, which is considered by naturalists as the most perfect of all those that have been invented, is a monument of the ingenuity and industry of that great man; but appears too complex and artificial for common readers, or young students, whose circumstances, occupations, pursuits, and future prospects, do not permit them to make the study of natural history the business of their lives.

To disseminate the knowledge of animated nature among all ranks of people, the easiest method, and that which is certainly best adapted to the general ideas of mankind is, to range the different orders according to their visible resemblance to some well known animal, which exhibits a characteristic distinction, obvious at the first sight, without burdening the memory with artificial systems and scientific discriminations.

If this work had been designed for the use of those who make the knowledge of natural history the principal object of their pursuit, the Linnæan system would certainly have been adopted and strictly adhered to; but it is calcu-

lated for students of a different description: for those who, without having leisure to devote themselves wholly to the study of this science, would not wish to be totally ignorant of the world in which they live. To instruct the youthful mind, in regard to the most important subjects of enquiry in the system of nature is the avowed design of this undertaking; and, indeed, a volume of so small a size cannot be supposed to be intended for the use of the professed naturalist. Without, therefore, pretending to criticise the works of other writers on this subject, or to depreciate their merit, which in many is conspicuous, it will not be amiss to say something of the manner in which it is here treated.

In the first place, a view is given to the young student of the grandeur of the universe, and of the structure of the solar system. Some of the most striking objects which this globe presents, such as seas, mountains, volcanoes, &c. are next brought forward to his inspection; his attention is then called to the winds, tides, exhalations, and other remarkable phenomena of the earth and the atmosphere; and afterwards to the principal metals, minerals, and other subterraneous productions. All these being described in a manner equally plain and concise, a sketch is given of the beauties and utility of vegetation, and a general view of the inanimate creation being thus exhibited, the transition is made to animated nature, which, as it is to youth the

most entertaining branch of natural history, occupies the greater part of the work. The most striking and interesting objects of the animal kingdom are delineated: the creatures which are peculiarly curious in their conformation or habits, and especially those which are most formidable or most beneficial to man, are particularly selected and described. Those of general utility or the greatest commercial importance, and those which frequently occur in conversation or reading, in the relations of travellers, and in the sacred or classical writings, are considered as the most interesting subjects of investigation.

The arrangement exhibited in the table of contents, appears best adapted to general ideas, and easiest to comprehend and remember; and as the book is designed for the use of both sexes, the greatest care has been taken to avoid a fault with which performances of this kind too often abound. Indecorous expressions, and every thing that has a tendency to vitiate juvenile ideas, have been carefully avoided; and the whole is interspersed with religious and moral reflections. The epistolary form has been chosen as well to give the young student some notion of the useful art of letter-writing, as to introduce the different subjects in an agreeable and impressive manner. The whole design of the work is, to convey to the juvenile mind, by an agreeable mode of communication, as much important information on the subject of natural

history as can be comprised in a volume of so small a size; and this will, perhaps, be found to be as much, as the generality of young persons, educated for business, will have leisure to attain.

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EXPLANATION OF
TECHNICAL TERMS,

UNAVOIDABLY USED IN NATURAL HISTORY.

- ACULEATED, sharpened.
AMPHIBIOUS, capable of living by land or water.
ANIMALCULES, small animals generally imperceptible without the aid of the microscope.
ANNULATED, marked with rings.
ANTLERS, horns overhanging the brows, applied to deer.
AQUATIC, living or growing in the water.
BIFID, divided into two parts.
BIMACULATED, marked with two spots, or two series of spots.
BIVALVE, or BIVALVULOUS, with shells or openings.
CALLOSITY, a hard lump.
CANINE, belonging to the dog kind.
CARINATED, formed like the keel of a ship.
CARNIVOROUS, living on flesh.
CARTILAGINOUS, having gristles instead of bones, generally applied to fishes.
CERE, a skin over the bills of birds, sometimes moveable, as in parrots.
CETACEOUS, of the whale kind.
CINEREUS, ash-coloured.
CORDIFORM, shaped like a heart.
CRUSTACEOUS, covered with shells, as lobsters, crabs, &c.
DIGITATED, having the feet divided into many parts, like fingers.
DORSAL, belonging to the back.
EXSANGUINOUS, animals without blood, as worms, &c.
ENTOMOLOGY, Description of insects.
FELINE, of, or belonging to the cat kind.
FERRUGINOUS, of an iron or rust colour.
FRUGIVOROUS, living on grain, seeds, &c.
FURCATED, forked.
GALLINACEOUS, belonging to the hen kind.
GESTATION, the time of going with young.
GREGARIOUS, associating together; applied to animals.
HERBIVOROUS, living on grass.
ICHTHYOLOGY, the description of fishes.
IMBRICATED, plated over one another like tiles.
INCUBATION, sitting on eggs, applied to birds.
INSECTIVOROUS, living on insects.

TECHNICAL TERMS.

- LATERAL**, belonging to the side, placed side-ways.
MIGRATORY, coming and going at certain seasons; sometimes applied to fishes, but most frequently to birds.
MULTIVALVE, with many shells or foldings.
NASCENT, young or growing.
NICTITATING, winking, applied to a membrane over the eyes of most birds.
OBFUSCATED, of a dusky colour.
OLFACTORY, relating to the smell.
ORNITHOLOGY, the description of birds.
OVIPAROUS, producing young by laying eggs.
PARTURITION, the bringing forth of young.
PASSERINE, belonging to the sparrow kind.
PATULOUS, open.
PECTORAL, belonging to the breast.
PENDULOUS, hanging.
PISCIVOROUS, living on fish.
PREDACEOUS, formed for pursuing prey.
QUADRIFID, divided into four parts.
SCABROUS, rough.
SCAPULARS, shoulders.
SEMILUNAR, in the form of a half-moon.
SETACEOUS, hairy.
SUBULATED, formed like an owl.
TESTACEOUS, covered with a shell, as oysters, &c.
TRIFURCATED, three-forked.
TRUNCATED, appearing as if cut off.
UNBRACEOUS, shady.
UNIVALVE, with one shell, fold, or opening.
VENTRAL, belonging to the belly.
VIVIPAROUS, bringing forth young alive.
WEBBED, connected with a membrane, as the toes of aquatic birds.
ZOOLOGY, the history of animated nature.
ZOOPHYTE, an animal plant.
-

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LETTERS

On the Study and Use of

ANCIENT AND MODERN HISTORY:

Containing Observations and Reflections on the Causes and Consequences of those Events which have produced conspicuous Changes in the Aspect of the World, and the general State of human Affairs.

Respecting the first edition of this work, the reviewers make the following mention:

After pointing out the requisite qualifications for the reader of history, the *Monthly Review* for June, 1804, thus proceeds:—"It is on this account that we consider a judicious survey of the history of the world, if it point out the principal outlines which merit the student's attention, and be also accompanied with remarks of such a nature as we have described above, as a very useful and valuable acquisition; and it gives us great pleasure to observe, that this desirable end is very successfully promoted in the collection of letters now before us.

"Mr. Bigland displays in this volume a well-cultivated and comprehensive mind. His style is generally correct, though not highly polished; his information is extensive; and the many pertinent remarks and inferences with which he has enriched this summary of general history, meet our cordial approbation."

The reviewer then goes into length with some of the most interesting extracts, and concludes thus:—

"What enlightened mind will not heartily concur in these just and liberal reflections! If our limits permitted, we could with pleasure proceed to state the author's view of America, and the probable effects which the discovery of that new world may ultimately produce; but it is time for us to close our remarks, together with the interesting volume which has excited them."

"We are well pleased with this publication, which, founded on the authority of the most celebrated historians, exhibits a very useful manual for the younger student. It is written with great vigour and perspicuity; nor do we see any sentiments obtruded, against which, as they relate either to religion or politics, it appears necessary to caution the young reader. It is an useful undertaking, well executed." *British Critic, July, 1804.*

"This little historic digest, collected from most unexceptionable authors, is executed with great neatness and propriety. The divisions, or "periods," are clear and discriminated. The different historic details are distinct and perspicuous: the reflections just and appropriate. On the whole, the letters claim our approbation." *Critical Review, July, 1804.*

LETTERS

ON

NATURAL HISTORY.

LETTER I.

"Then stryed the fervid wheels, and in his hand
He took the golden compasses, prepared
In God's eternal store to circumscribe
This universe, and all created things :
One foot he cent'ring and the other turn'd
Round thro' the vast profundity obscure ;
And said : Thus far extend, thus far thy bounds,
This be thy just circumference, O world."

MILTON.

DEAR SIR,

I AM much pleased to find that you are actuated by a spirit of enquiry, which, at so early a period of your life does you the highest honor, and is a proof of the goodness of your understanding. In youth, a desire of information on subjects curious and interesting is the characteristic of the great mind, and announces, at some future period, the great man ; while an unthinking apathy, and stupid indifference, with respect to the nature of those scenes, in the midst of which we are placed, are unequivocal signs of a vulgar and groveling intellect. Curiosity indeed is a principle so radically inherent in the human mind, and so universally prevalent, that it is chiefly from the objects to which it attaches itself, that the measure of the understanding is to be estimated : yours I am happy to say has taken a right direction. You desire some acquaintance with Natural History, some knowledge of this world of wonders in which, by the gracious dispensations of a benevolent Providence, you see yourself placed. Be assured that, in so commendable a pursuit, I shall esteem myself happy to contribute to your satisfaction by my assistance.

It is indeed, my dear Sir, a singular pleasure to me to coincide with the dictates of your own understanding in recommending to your attention a science which I perceive that you now think, and am convinced that you will soon find, not less agreeable to study, than important to know. A knowledge of natural history has always been esteemed an elegant accomplishment in a gentleman, as well as necessary to the philosopher, and, indeed, it is useful to every one, whatever his station in life may be.

Natural history, or natural philosophy, considered in its full extent, takes in an immense circuit, and comprises an innumerable variety of objects. Its range is indeed as wide as the universe itself; and it exhibits to our view all the various forms of animate and inanimate matter; or, in other words, all the objects that have or have not life, of which the world is composed. It describes the structure of the universe: the motions, magnitudes and relative distances of the planets belonging to the solar system, and their distance from the sun, their common centre round which they make their ceaseless revolutions. It then descends to the description of this globe which we inhabit, and which is called the earth, and exhibits to our contemplation its parts and productions from the greatest to the smallest objects. The beasts of the earth, the fishes of the sea, the fowls of the air, the various trees, plants and flowers that diversify the landscape with an endless variety, all come within the limits of natural history. More need not be said to convince you that such a study must be exceedingly interesting and agreeable. Every day you will discover new objects of attention; every excursion will present to your view a variety of scenes beautiful or sublime: at home or abroad, in your closet or in the field, you will possess in your mind a resource against ennui: you will never be at a loss for expedients for passing your time, not to be driven to seek amusement in the insipidity of the card-table, or the senseless roar of Bacchanalian revels.

The sciences which have for their object the inves-

tigation and description of the created system, take different names according to the different departments of nature which they explore and describe. Cosmography has for its object the whole machine of the universe, of which it examines and describes the magnificent and harmonious construction. Of this science astronomy and geography, the former relating to the heavens, and the latter to the earth are the two constituent parts. The profound investigations and extensive range of these sciences, are not suited to our present purpose, and I shall therefore content myself with giving you a very concise sketch of this stupendous structure; this world in which we live, briefly describing its principal parts and most striking phenomena. You seem likewise desirous of being acquainted with the most remarkable metals and minerals which the earth contains in its bowels, and affords for our use, and request that I would give you some information concerning their properties. I shall endeavour to comply with your wish as briefly as possible, that no time may be lost in leading you to a view of animated nature, which constitutes the principal object of your enquiry, and that indeed which is the most suitable to your age, as well as the most universally pleasing and interesting.

With every wish for your happiness

I am, dear Sir, your's, &c.

J. B.

LETTER II.

"These are thy glorious works, parent of good
Almighty, thine this universal frame,
Thus wond'rous fair; thyself how wond'rous then!"

MILTON.

DEAR SIR,

NATURALISTS have divided the whole of created things which the earth produces, or supports, into three grand departments, to which they have given

the names of the animal, mineral, and vegetable kingdoms: the first comprehends every thing that has life; the second all metals, minerals, &c. that are dug out of the earth; and the third all the different kinds of trees, plants, herbs, fruits, flowers, &c. that grow upon its surface. It is not my intention to trouble you with scientific terms which are at present too abstruse for your comprehension; on the contrary, I wish to address you in the plainest language; but it was necessary to give you a notion of those three grand departments or divisions of nature, which are frequently mentioned in books and conversation.

Before we proceed to a delineation of the different objects which the study of natural history presents to our view, a consideration of the greatest importance forces itself upon the thinking mind, which is, that in examining the works of the creation, we must begin by raising our thoughts to the great Creator. Religion is a necessary companion to the study of natural history; and we shall make a wrong beginning if we do not commence our survey of nature with the contemplation of the infinite perfections of the God of nature, whose power, wisdom and goodness are so eminently displayed in all his works.

We see ourselves placed in a world, abounding with an infinite variety of objects calculated for our use, our convenience, and amusement; and we find ourselves endowed with understanding to convert them to those uses, for which infinite wisdom has evidently designed them. This circumstance, among a multitude of others, is a convincing proof that this world in which we live cannot be the effect of chance, but is the work of a being infinitely powerful, wise, and good, who is every where present, and governs all things by his Providence, as he created them by his power. This great, universal, and eternal Being, who continues from everlasting to everlasting without change, and who is present in every place although invisible to us, is the God who created heaven and

earth, and whom men and angels adore. This idea you ought to have always present to your mind, for unless you direct your thoughts to the contemplation of the power, the wisdom, and the goodness of God, the world will be a mystery that you can never penetrate, and every thing you see will appear involved in obscurity. Yes, let this great truth be always present to our remembrance, that if we do not frequently direct our attention to the Creator, we can never have a clear and luminous view of the creation, and that unless we refer all to him, our learning will end in ignorance, and our fancied knowledge will be no more than folly.

"Oh! how dark is human reason found,
How vain the man with wit and learning crown'd;
How feeble all his strength when he essays,
To trace dark nature and detect her ways,
Unless he calls its author to his aid,
Who every secret spring of motion laid;
Who over all his wond'rous works presides,
And to their useful ends their causes guides;
These paths in vain are by inquirers trod,
There's no philosophy without a God."

BLACKMORE.

In full persuasion that these awful and yet pleasing considerations will remain deeply impressed on your mind, I shall for the present leave you to the sublime and agreeable contemplation, and conclude by assuring you that with a heart felt concern for your welfare, and with every sentiment of affection,

I am, dear Sir,

Your's, &c.

LETTER III.

"The heavens declare the glory of God, and the firmament sheweth his handy work."

PSALM xix.

DEAR SIR,

THE firmament spangled with stars presents the most magnificent spectacle that imagination can conceive.

and certainly no one can lift up his eyes to the sky in a clear evening without feeling a variety of solemn as well as pleasing reflections arise in his mind. This indeed is natural to the most ignorant observer ; and the most uninformed peasant, as well as the most enlightened philosopher, cannot contemplate so stupendous a view without a mixed emotion of pleasure and astonishment. If, however, the bare view of the almost innumerable stars that sparkle in the firmament be capable of thus forcibly attracting your attention and commanding your admiration, what would be your astonishment if you were acquainted with their magnitudes, their regular motions, and their immense distances from this earth which we inhabit !

Your inexperienced judgment, my dear Sir, may perhaps suppose that the stars are no more than little shining dots ; but this notion, which is very natural to your tender years, and consequently excusable until you are better informed, you will, as soon as your mind is enlightened by instruction, discover to be very erroneous. As you advance in your studies you will endeavour to acquire at least such a general knowledge of astronomy as will unfold to your expanding mind such wonders as cannot fail to impel you to admire and adore the infinite perfections of the great Creator. As I wish to communicate to you both pleasure and instruction, without puzzling your understanding, I shall at present confine myself to give you a few such general and striking ideas, of the structure of the universe, and of the nature of the starry heavens, as may excite you to make suitable reflections on the power, the wisdom and the goodness of God, who has constructed the magnificent fabric.

The sun is an immense and wonderful globe or ball of fire, which gives light and heat to all that part of the Creation called the solar system. It is placed near the common centre of the orbits of seven large globes, which have no light or heat but what they derive from it. The diameter of the sun is eight hundred and ninety thousand miles, so that although

you may think it small, it is really larger than this earth, which is divided into so many extensive kingdoms and empires. How grand an idea must this excite of the greatness of Him who created the whole universe!

Of the seven planets which compose the solar system, Mercury is the nearest to the sun; its mean distance from which is about thirty-six millions, eight hundred and forty-one thousand, four hundred and sixty miles. Its diameter is three thousand two hundred miles, and it revolves round the sun in eighty-seven days and twenty-three hours.

Venus is sixty-eight millions eight hundred and ninety-one thousand four hundred and eighty miles distant from the sun, revolves round him in two hundred and twenty-four days seventeen hours; and upon its own axis in twenty-three hours and twenty-two minutes. The diameter of Venus is seven thousand seven hundred and forty-three miles.

This earth on which we live is ninety-five millions one hundred and seventy-three thousand miles from the sun. It revolves upon its axis in twenty-four hours, which is our day, and completes its revolution round the sun in three hundred and sixty-five days, six hours, forty-nine minutes and fifteen seconds, a space of time which constitutes our year; the diameter of the earth is seven thousand nine hundred and forty-two miles.

Mars is one hundred and forty-five millions fourteen thousand one hundred and forty-eight miles distant from the sun, makes his revolution round him in one year three hundred and twenty-one days and twenty-three hours, and revolves upon his own axis in one day and forty minutes. The diameter of Mars is four thousand two hundred and twenty miles.

Jupiter is distant from the sun four hundred and ninety-four millions nine hundred and ninety thousand, nine hundred and seventy miles, makes his periodical revolutions round the sun in eleven years three hundred and fifteen days and fourteen hours: and revolves upon his axis in nine hours and fifty-six

minutes. His diameter is eighty-nine thousand eight hundred miles.

The distance of Saturn from the sun is nine hundred and seven millions nine hundred and fifty-six thousand one hundred and thirty miles. He completes his periodical revolution round the sun in twenty-nine years one hundred and seventy-four days and two hours : and revolves upon his own axis in ten hours and sixteen minutes. The diameter of Saturn is seventy-nine thousand six hundred miles.

The distance of the Georgium Sidus from the sun is one thousand eight hundred and fifteen millions nine hundred and twelve thousand two hundred and sixty miles ; and it makes its periodical revolution in eighty-three years one hundred and fifty days and eighteen hours. The time employed in revolving upon its axis is as yet, like that of Mercury, undiscovered. The diameter of the Georgium Sidus is thirty-nine thousand nine hundred miles.

Besides these seven planets, two other small planetary bodies, which revolve round the sun, have lately been discovered. Of these one was first observed on the first of January, 1801, by M. Piazzi, astronomer-royal at Palermo, in Sicily, who called it *Ferdinanda* in honour of his Sicilian Majesty : it is also called *Ceres*, or *Ceres Ferdinanda* ; the other, discovered since by Dr. Olbers, of Hamburgh, has been named *Pallas*. Both these new planets have their orbits between those of Mars and Jupiter ; Ceres revolves round the sun in four years two hundred and twenty-two days ; and is distant from that luminary above two hundred and fifty millions of miles. The distance of Pallas from the sun is about two hundred and seventy millions of miles. Both are entirely invisible to the naked eye. The diameter of Ceres is estimated by Dr. Herschel at only one hundred and sixty, and that of Pallas at one hundred and ten English miles.

Much more might be said concerning the orbs which composed our system, their motion and their distances from one another in the different points of

their orbits ; but these things belong to the science of astronomy which will open to your view new scenes and fill your mind with new pleasures. Enough however has been said to excite you to extend your inquiries at a maturer age, and, in the study of Nature and Nature's God, you will always find your admiration excited and your pleasure increased in proportion to the increase of your knowledge.

These orbs, of whose motions, magnitudes, and mean distances from the sun I have exhibited a concise sketch, are called primary planets. The moon is only a secondary planet or statellite to our earth, round which it makes its revolution in twenty-nine days, twelve hours and twenty-four minutes, and is carried along with this globe round the sun in one year. Other planets also have moons or statellites revolving round them and carried along with them in their orbits : Jupiter has four, Saturn seven, and the Georgium Sidus six. The diameter of the moon is two thousand one hundred and eighty miles, so that you perceive it is far less than the least of the seven primary planets, and its nearness to the earth is the cause of its greater apparent magnitude.

Besides these there are another sort of solid bodies like the planets, of which the orbits are exceedingly eccentric, and their motions irregular. They are called comets. Little is known concerning them. Though great numbers have made their appearance at different times, the periods of three only have been ascertained with any degree of certainty by astronomers, who have found that they return at intervals of 75, 129, and 575 years. Of these the latter, which appeared in 1680, is the most remarkable. This comet, when at its greatest distance, is about eleven thousand two hundred millions of miles from the sun, and at its nearest approach only about four hundred and ninety thousand miles. Sir Isaac Newton computed that when nearest the sun it must have acquired a heat two thousand times greater than that of red hot iron ; and considering its size, that it could not become cold in twenty thousand years.

Little also is known, or can perhaps be discovered, in regard to the fixed stars which bespangle every part of the firmament. Astronomy has, however, proceeded so far as to prove, or at least to shew that it is in the highest degree probable, that they are suns illuminating other systems or worlds. But no mode of calculation can compute their distances from our earth or from each other. One observation, however, I shall here venture to make, which is not wholly above your comprehension. Whenever you view distant objects you will easily remark that as you change your place in travelling on the road, they seem to change their relative situation, and the nearer they are, this change is more perceptible, but less apparent the farther they are from you. The earth is always above one hundred and ninety millions of miles distant from the opposite points of its orbit in which it was half a year before, and yet so great a change of situation does not make any change in the relative positions of the fixed stars perceptible even by the assistance of the best astronomical instruments, so that their distance is not incapable by any mathematical process, but absolutely inconceivable by human comprehension.

The immense distance of the fixed stars from the earth and from each other is of all considerations the best adapted to impress on our minds the most exalted ideas of the immensity of the universe and of the infinite power, wisdom and goodness, of its Creator. The number of stars which may at any time be seen by the naked eye, is not much above a thousand, but the gradual improvement of the telescope has afforded such assistance to our natural optics, that the celebrated Dr. Herschel has discovered no less than forty-four thousand; and how many more the still greater perfection of these instruments may yet render visible to us, it is, at present, impossible to know.

When we contemplate the distance between this earth and the sun it seems astonishing, and to those who are ignorant of astronomy almost incredible. This distance however, great as it is, is small when

when compared with that of some of the planets from the same luminous centre ; and very trifling indeed in respect of their distance one from another when on the opposite sides of the sun. But when we consider the incalculable distances of the fixed stars from our earth and from one another, an extent bursts upon our view which overwhelms the mind with admiration and astonishment. We contemplate worlds beyond worlds, and our conceptions are bewildered in the vast immensity. Imagination itself can set no bounds to the immeasurable extent of the Creation, nor can all the efforts of the human mind, aided by the discoveries of science, determine the central point, where the great Creator fixed "the golden compasses," or how wide he swept the immense circumference.

If you, my dear sir, should undertake to travel over this globe, or as we commonly say, the world, in different directions from east to west, and from north to south, and visit all the various countries into which its surface is divided, you would, how expeditiously soever you might travel, employ a great number of years in the journey. You would find your curiosity continually excited and gratified with the sight of new objects presenting themselves to your view. High mountains, vast forests, extensive countries, immense oceans would successively fill your mind with surprise and give you a grand idea of the prodigious extent of this habitation of men. You are, however, to observe, that if you were placed in any one of the planets the globe would only seem a single point as they appear to us. In the more distant planets, as Jupiter and Saturn, it is very much to be doubted whether it could be perceived without the aid of a telescope, and it is extremely probable that a person placed in the Georgium Sidus would not be able to discover the earth with the best telescope that has yet been invented.

In considering the immensity, as well as the regular harmony of the universe, you will be convinced that no one can lift up his eyes to the starry heavens without feeling himself irresistibly impelled to adore the

Creator of all these wonders, and that our excellent poet Young had reason to say,

“An indevout astronomer is mad,”

For from this concise sketch of the Creation you will, although you are not an astronomer, easily comprehend that this globe, which men inhabit, and which is divided into what we call immense oceans and vast continents, is no more than a grain of sand among the works of Him who is infinite.

“Yet is this mighty system which contains
So many worlds, such vast ethereal plains,
But one of thousands which compose the whole
Perhaps as glorious and of worlds as full.”

BLACKMORE.

With sincere affection I am, &c.

LETTER IV.

“Immediately the mountains high appear,
Emergent, and their broad backs upheave
Into the clouds, their tops ascend the sky.”

MILTON.

DEAR SIR,

FROM the starry heavens we must in the next place, direct our attention to this sphere which is allotted by the great Creator for the habitation of mankind, where we shall find abundance of objects to attract our observation and excite our astonishment at the multiplied wonders it displays. We see the earth divided into different compartments by seas, watered by rivers, and its surface diversified by mountains and valleys, exhibiting the most judicious arrangement and producing the most beneficial consequences. These inequalities of the earth's surface may, by superficial observers, be regarded as a mere capricious work of nature, a disposition without design, and many suppose them to have been caused by the deluge which has left in this irregular state the wreck of the antediluvian world. Although we cannot pretend to say what changes may have ta-

ken place at that time, it is evident that the exterior parts of the earth must, from the time of its first formation, have been uneven ; for if the earth were one continued plain, it would be no more than an immense morass, and habitable only by frogs and fishes, or creatures of a similar nature. Those inequalities, and this endless variety of hill and dale, mountain and valley, which to the undiscerning eye may appear irregularities, not only diversify the face of this globe with the most beautiful scenery, but are absolutely necessary to promote the running off of the waters, which would otherwise stagnate on the ground and convert it into one continued swamp, unfit for vegetation, or the support of any animals except those of the aquatic kind. Thus it is evident that nothing is the effect of chance, but that every thing displays a grand design, producing the most perfect harmony from apparent irregularity, in such a manner as nothing short of infinite wisdom could have either devised or performed.

“ All nature is art but unknown to thee,
All chance direction which thou canst not see.”

Every where we see a mixture of hill and dale, of rising grounds and hollows, and even in those parts which seem uniformly level, the absolute evenness of surface extends to a very small distance. In some countries we see mountains of a stupendous height. Mount Blanc, which is generally considered as the highest part of the Alps, is something more than a mile and a half high. This, like many others of the Alpine hills, is perpetually covered with snow ; and no mortal had ever ascended to its top until A. D. 1786, when Dr. Paccard and James Balma, an inhabitant of Chamoing, a little town at the foot of the mountains, undertook and performed the difficult task. The year following it was ascended by M. de Saussure, a gentleman of Geneva, whose account of his journey is curious and interesting. Mount Blanc is generally supposed to be the highest land in Europe, and by some the highest of the old continent ; but

M. Buffon imagines that some of the mountains of Asia, particularly those of Taurus, Imaus, Caucasus, and the mountains of Japan, as well as the mountains of the Moon, in Africa, from whence the principal branch of the Nile arises, are higher than any part of the Alps. This point however does not appear to be well ascertained ; but we have it from good authority that the Andes, in South America, far exceeded in elevation the highest mountains of the old world. The perpendicular height of Chimborazo, the most elevated summit of the Andes, is asserted by Juan de Ulloa to be nearly three miles, and a half. The same traveller also informs us that the line of congelation, where perpetual frost begins, is about half a mile perpendicular below the summit. It is in general observed that the mountains of the torrid zone are higher than those of the temperate, and these higher than those of the frigid zones. The cause of this, like that of many other circumstances of the physical and moral world, is unknown ; but as we can easily perceive order and design in all the works of nature as far as our researches can reach, we are fully authorized to suppose that the same consistency of plan exists in those which lie beyond the sphere of our comprehension. If, therefore, we should, on this principle, hazard a conjecture, it is not improbable that infinite wisdom has formed the highest mountains nearest to the equator in order to attract and form into clouds that immense mass of vapours exhaled by the ocean in those regions where the sun is vertical, and, by, this process of nature, to purify the atmosphere and render it less insalubrious than it would be if the surface of these countries were more uniformly level.

It would, sir, confine your attention too long to this subject, were I to describe ever so concisely, or even enumerate, all the mountains with which the face of this globe is diversified. There are, however, a few which are too remarkable to be passed over in silence. These are the volcanoes or burning mountains. These contain within their bowels sulphur and

other bituminous inflammable matter which afford aliment to subterraneous fire. In Europe there are three remarkable volcanoes, Mount Etna, in Sicily, Mount Vesuvius, about six miles distant from Naples, in Italy, and Mount Hecla, in Iceland. It is said that the inhabitants of the last country imagine Mount Hecla to be the mouth of hell, and the roaring of its eruption, to be the cries of the unhappy wretches consigned to that place of torment. But I shall not trouble you with tales of superstition young as you are, I flatter myself that you are sufficiently instructed to laugh at such ridiculous notions; and to pity those uncultivated minds whom ignorance renders the dupes of such absurdity. This will also shew the importance of the study of natural history, since, if these illiterate people had more knowledge of the works of nature, they would not thus be under the influence of superstition.

Mount Etna has burned from time immemorial: its eruptions are sometimes tremendous beyond description, and its roaring louder than thunder. Both this mountain and that of Vesuvius vomit forth torrents of smoke and flame with rivers of sulphur, melted metal and other burning matter. Sometimes they eject enormous rocks to the distance of several miles. The combustion has been frequently so terrible, and the quantity of melted matter, called lava, so great that it has overwhelmed cities, covered the adjacent fields to the depth of more than an hundred feet, and formed new hills by the accumulation of the ejected substances. The explosions of the subterraneous fire have been so violent as to shake the earth and agitate the sea to a great distance. The same phenomena have been produced by the eruptions of Mount Hecla, and indeed the nature and effects of all volcanoes are perfectly similar: the greater or less frequency and violence of their explosions are determined only by the quantity of inflammable matter contained in them, together with various concurrent causes that may accelerate or retard its combustion.

The eruptions of Mount Etna have been so violent,

and the lava ejected in such abundance, that it may be dug up even to the depth of more than sixty feet. At about that depth a marble pavement has been found with the vestiges of an ancient town, which has formerly been buried under this thickness of lava. New mouths of fire have been formed in this mountain, A. D. 1650, 1669, and at several other times. The flame and smoke of this volcano have been seen at Malta, which is almost an hundred and ninety miles distant. In 1537 there was a most tremendous eruption of Mount Etna, with dreadful earthquakes, during the space of twelve days, which overthrew a great number of buildings. The cinders ejected at that time from the vulcano were carried as far as Italy by the violence of the explosion.

The most dreadful eruption of Mount Vesuvius, of which we have any authentic information, happened in the reign of the Emperor Titus about A. D. 79. Of this Pliny gives a very circumstantial account. One of the last great eruptions of this mountain happened A. D. 1737. It vomited, by several months, prodigious torrents of lava, which spread itself over the country until it reached the sea. The breadth of one of those rivers of fire was not less than between sixty and seventy feet, and the matter resembled the scum that issues from the furnace of a forge. The ancient cities of Pompeii and Herculaneum were buried under the lava in the great eruption of this mountain, which happened in the time of Pliny, and were not discovered until the last century. There have been many eruptions in the latter part of the last century, some of which were accurately observed, and have been circumstantially described by Sir W. Hamilton.

The last considerable eruption of Vesuvius happened in the night of the 13th of June, A. D. 1794. It was preceded by earthquakes. The mountain at first opened in two places, and from the two apertures issued immense columns of black smoke, mixed with liquid burning matter: more mouths were afterwards opened, from all of which proceeded explosions louder than

thunder, sudden and violent, resembling those of the heaviest artillery. The lava, or rivers of fire, flowed at the rate of about a mile per hour. The greatest part of the village of Torre del Greco, distant one mile from Portici, was destroyed. The inhabitants, to the number of seventeen thousand saved themselves by a speedy flight, and happily there were not above fourteen or fifteen lives lost. The lava covered and totally destroyed above fifty thousand acres of rich vineyards and cultivated ground; and the temporary damage in other adjacent places was very great, as the ashes laid for several miles round not less than four feet in depth.

I might, my dear sir, entertain you with an account of a great number of other wonderful natural curiosities, which the surface of this globe in many parts displays, such as dreadful precipices, stupendous caverns, &c. which it would at present be useless to enumerate, as you will meet with accurate and very entertaining descriptions of them in books of geography and travels, to which they more particularly belong, and the perusal of which I recommended to your attention as affording an ample fund of rational amusement as well as of useful information. Enough has been here said on these subjects to shew that the Almighty is wonderful in all his works.

With every sentiment of esteem and affection

I am, dear Sir, your's, &c.

LETTER V.

"Infermer of the planetary train!

* * * * *

The mineral kinds confess thy mighty power

Effulgent: hence the veiny marble shines;

Hence Labour draws his tools; hence burnish'd War

Gleams on the day; the nobler works of Peace

Hence bless mankind."

THOMSON.

DEAR SIR,

WE cannot with propriety conclude our survey of this immense mass of inanimate matter which, by the operation of infinite power and wisdom, is so moulded

as to form the terraqueous globe, the surface of which is diversified with so enchanting a scenery and through infinite goodness rendered productive of every thing necessary for the comfortable support of human and animal existence, without casting a glance on the conveniences and riches contained within its bowels. I shall not take up your time in tasking you to pore over a volume of mineralogy, I shall only exhibit to your view some of the most remarkable characteristics and qualities of those metals, minerals, and other subterraneous productions of the earth which are of the greatest utility to man or have obtained the highest place in his estimation. Of metals, the principal are gold, silver, copper, iron, lead and tin, and according to the enumerations made by some mineralogists we may add mercury, or quick-silver.

Gold is the heaviest, purest and most docile of all metals. It is found in mines and sometimes in small grains in the sandy bottoms of rivers, which last is called gold dust. There are gold mines in many parts of the world, but few have been discovered in Europe, and those so unproductive as not to be worth the expence of working. The mines of Mexico and some other countries of Spanish America are the richest; but very fine gold is also found in some parts of Africa and the East Indies. Of all the properties of this metal its ductility is the most surprising. A single ounce of gold may be extended to a surface of an hundred and fifty square feet, and yet it will remain so entire that not the least flaw can be perceived even by the help of the best microscope. Mr. Boyle says, that gold may be drawn into so fine a wire, that an ounce will extend an hundred and fifty-five miles and an half, or even to a much greater distance. In gold mines there is often found another metal called platina, which is the heaviest of all substances, and much harder than gold or silver.

Next to gold, silver is the most valuable of all metals as well as the finest and most ductile. Mr. Boyle says that he procured a single grain of silver

to be drawn out to the length of twenty-seven feet. There are silver-mines in most parts of the world, but those of Peru are by far the richest. The Abbé Raynal says, that when the famous mines of Potosi were first opened, a cwt. of ore yielded fifty pounds of silver, but that at present the same quantity of ore produces no more than two pounds of that metal. At first the ore was found very near the surface of the mountain, but now the veins lie so low that the workmen go down a descent of four or five hundred steps, from which circumstances some suppose that these celebrated mines are almost exhausted.

Copper is a hard, heavy and ductile metal, abounding with vitriol and an ill-digested sulphur called verdigrease, which renders utensils made of this metal, unless kept very clean, extremely unwholesome. Copper is found in many parts of Europe; but the mines of Sweden produce the greatest quantity. It is dug up in large fragments of ore, which are first beaten small, then washed to separate the earthy parts, and afterwards smelted and cast into large blocks. Bronze is a mixture of copper and tin. Two parts of copper and one of zinc forms brass.

Iron is a compound of different materials, and is hard, fusible and ductile. In England there are many iron-mines, but those of the forests of Dean, in Gloucestershire, are the most productive. If utility were made the standard of estimation, iron would hold the first place in the class of metals; and would be accounted more valuable than gold, as it appears indispensably necessary to the carrying on of every art and manufacture: at least it is certain that without the use of iron it is impossible to bring any of them to perfection. This metal appears to be one of the principal means of civilizing mankind. There has never been an instance of a nation that understood the art of manufacturing iron but what in time attained to a degree of civilization infinitely beyond that of the inhabitants of those countries where this metal was wanting, or its use unknown. This, my dear sir, is not to be wondered at, when you consider that if the iron-mine

did not furnish you with a pen-knife for making your pen, it would be no easy matter to find a substitute for that small but useful article ; and consequently that without this valuable substance, neither letters nor any of the arts and sciences which improve the mind, and produce the conveniences and embellishments of civilized life, would have ever been invented.

You cannot, my dear sir, read without astonishment the exploits of the Spaniards is the conquest of Mexico and Peru ; but if you consider the advantages possessed by troops though few in number, but disciplined and armed in the European manner over numerous armies furnished with no better weapons than pointed stakes, or at the best, headed with sharp flints, you will regard with less surprise these important achievements. We shall, in its proper place, remark the disadvantages under which the Americans labored in wanting the horse, as well as the rest of our domestic animals ; here, however, we must make this important observation, that although many parts of North America abound with iron-mines, yet as they had not been discovered, an insurmountable obstacle had always opposed itself to the improvement of the inhabitants of the new world ; and until it was removed must have prevented them from making any great progress in civilization, or equalling the Europeans either in arts or arms. The natives of the South Sea isles are precisely in the same situation. In perusing the relations of Captain Cook's voyages, and those of other modern circumnavigators, you will find how well the Otaheiteans and others had, from experiencing the want of iron, learned to appreciate its utility, although they were acquainted with but few of the various purposes to which it may be applied. With them, as soon as they had acquired the knowledge of a very few of its most simple uses, it was considered as an estimable article for which they were ever ready to barter their most valuable commodities. A wedge of gold would by these savages have been esteemed a treasure far less valuable than a nail, which they used chiefly for the purpose of

heating in the fire and boring holes in wood. This circumstance ought to excite the polished European to contemplate with admiration and gratitude the wisdom and goodness of the Creator in furnishing us with an article so essential to the welfare of the human species.

Iron is found in most parts of the world ; but Russia and Sweden produce the greatest quantities. The mines of those countries are almost inexhaustible ; and it must be considered as an unequivocal proof of a wise and benevolent design in the great plan of the Author of nature, that iron, which is so indispensibly necessary to mankind, is found in such great plenty in so many different countries ; that while it is the most useful it is also the cheapest of metals. Perhaps Creation scarcely affords a more conspicuous and striking instance of the beneficial and harmonious adaptation of things in the universal system.

As I cannot leave your mind impressed with a subject more worthy of attention, or better adapted to excite reflection, I will give you a few moments of leisure, and we will afterwards finish our survey of the mineral kingdom.

Most affectionately I am,

Dear Sir, your's, &c.

J. B.

LETTER VI.

"The unfruitful rock itself, impregn'd by light,
In dark retirement forms the lucid stone."

THOMSON.

DEAR SIR,

YOU will, after these observations on the nature and utility of iron, naturally be desirous of knowing the origin of steel, which gives perfection to every kind of edge-tools, and is also used in various other manufactures. The information requisite on this subject may be easily given. Steel is nothing but iron heated with red-hot charcoal until it acquires that

hardness and elasticity which we see it possesses. Little also is necessary to be said on the subject of lead, which is a compound of earth and sulphur, together with a small portion of mercury. It is found in most countries, and is exceedingly plentiful in England, particularly in Derbyshire. Tin is also a metal which abounds so much in this country, that the mines of Cornwall and Devonshire furnish the greatest part of the tin consumed in Europe. Pewter is a composition of which six parts are brass, fifteen lead and one hundred tin. Thin sheets of iron, coated with tin, compose the manufacture called block-tin, an article much in use.

The bowels of the earth scarcely afford a material of a more wonderful nature than mercury, or, as it is often called, quicksilver. It is an imperfect metal, neither ductile nor malleable, (i. e.) neither capable of being drawn into length nor spread into breadth by the hammer; but consisting of a fluid substance, resembling melted silver, and having a constant tendency to form itself into globules. It is chiefly found in Hungary, Spain, Italy and Peru. The greatest part of that consumed in England is brought from the mines of Friuli, in Italy. It is of great use both in manufactures and medicine.

Mines of quicksilver are extremely unwholesome: all mines indeed are so in a considerable degree; but those of tin are more unfavourable to health than those of coal; copper-mines more so than those of tin; and mines of quicksilver are so pernicious to the human frame, that at the mines of Idra nothing can be more shocking than to see the infirmities of those miserable objects that crowd the hospital. Emaciated and crippled, they have every limb contracted or convulsed; and some of them in a manner transpire quicksilver at every pore. "There was one man," says Dr. Pope, "who had not wrought in the mines above half a year, and yet his body was so impregnated with this mineral that a piece of brass put into his hand, or rubbed between his fingers, immediately became as white as if had been washed over with silver." All

the workmen sooner or later become paralytic and then die consumptive, and for this they have the trifling reward of seven-pence a day ! Would it not be a regulation worthy the attention of the legislature of that country to prohibit the employment of any person in those caverns of horror and destruction any longer than a month at one time ?

Coal-mines are perhaps of all others the least injurious to health. They employ a great number of hands, and are not only a source of wealth to the proprietors, but also a great national benefit. Coal is well known to be an excellent kind of fuel ; and although the smoke it emits, be somewhat gross and hurtful to those that have weak lungs, it is certainly of great use in repelling pestilential miasmata and preventing contagious disorders.

The richest of subterraneous productions according to the caprice of human estimation, although of no real use, are those called precious stones, or gems. These are the diamond, the ruby, the garnet, the hyacinth, the amethyst, the emerald, the beryl, the sapphire and the topaz, or crysolite, which are all transparent. Diamonds are found in great plenty in Brazil, but the best are brought from the mines of Golconda, in India. You will be surprised to hear that a diamond was, in the last century, sold to Count Orloff for above 140,000*l*, and that a much greater sum had once been bidden for that valuable gem. The diamond is the hardest of all gems, and can be cut only by itself or its own substance. The ruby is reckoned next to the diamond in value, and is of a dark crimson colour, the garnet somewhat resembles it, and is perhaps of the same species. The hyacinth is sometimes of a deep red and sometimes of a yellow colour : the amethyst of a bright purple : the emerald of a deep green : the beryl of a bluish colour : the sapphire of a sky blue : the topaz, or crysolite, of a gold colour. Those which are only half transparent, are the cornelian, which is of a pale red : the onyx, of a greyish colour : the turquoise,

of a shade between blue and green : and the lapis-lazuli, a beautiful stone, studded with spots of gold colour on a fine azure ground.

All these glittering gems taken collectively, are not equal in real value to the magnet, or loadstone, a substance possessing no beauty, and somewhat resembling iron ore, but more compact and ponderous. The qualities of the magnet are wonderful. It attracts iron which adheres to it very strongly, and the same virtue is also communicated to the iron thus brought into contact. In the magnet there are two poles, one pointing northwards and the other southwards ; and into how many pieces soever it may be divided, the two poles will be found in each piece. It is this property that has rendered it of such use in improving the art of navigation, for it gave rise to the invention of the mariner's compass, by which the modern navigator can conduct a ship to the East or West Indies with as much certainty, and as little danger, as the ancients could direct their course from Greece to Italy. Thus has the all-wise and beneficent Creator admirably provided for the exercise of the ingenuity of man, as well as for the advancement of his interests.

With sincere affection I am,

Dear Sir, your's, &c.

J. B.

LETTER VII.

" ——— The first Almighty cause
Acts not by partial, but by general laws."

POPE.

DEAR SIR,

IT would far exceed the limits of our epistolary correspondence, and also be unsuitable to your early years, to exhibit to your view all the different rules which an omnipotent and omniscient Creator has established in the system of nature. I might speak to you of centripetal and centrifugal forces, and of that universal law of gravitation which prevades the whole

material creation, and by causing all bodies to tend to one common centre, retains every thing in its place, and thereby gives consistency and adhesion to all the different parts of the immense structure. Your enquiring mind will at a maturer age explore all those wonders of nature : at present I will endeavour to direct your attention to things more within the limits of your capacity. I will briefly inform you that the earth is surrounded with an atmosphere of air, more condensed near the earth and at a greater elevation more rarefied. The height to which this atmosphere extends is generally supposed to be about sixty miles, above which elevation there are neither clouds nor wind, and the lightness of the air would prevent any animal from breathing. The winds which continually range over the earth are nothing more than air put in motion, chiefly by the means of heat. When any part of the air is heated by the rays of the sun or any other cause it is expanded and becomes lighter ; and as the lightness causes it to ascend, it leaves a partial vacuum into which the surrounding air, which, like water and every other fluid, never rests until it has found its level, rushes in, in order to fill up the void and restore the equilibrium. This simple process, of which the effects are exceedingly extensive, meeting with various checks and interruptions from an infinity of obstacles, is the sole cause of all the agitations which we perceive in the air, and which sometimes burst forth into the most furious tempests, or the most destructive hurricanes : all this is produced by the precipitancy of the condensed air rushing towards some part where a partial vacuum is caused by extreme rarefaction.

Clouds are nothing more than a collection of misty vapours exhaled by the sun from the sea and most parts of the earth, and suspended in the air in such a state of condensation, that by intercepting the rays of the sun they form a shadow and appear dark. The clouds seldom ascend to the height of more than a mile ; and on the tops of high mountains it is com-

mon to see them floating below. The wonderful variety of colours which they exhibit is entirely owing to their situation in respect of the sun, and the different reflections of his light, and their various figures result from their loose and voluble texture which disposes them to resolve into any form according to the force and direction of the wind.

Rain proceeds from the condensation of the clouds by the effect of the cold. When they are greatly condensed they become too heavy to float in the air and then descend in drops.

In winter, when the regions of the air are intensely cold, the clouds quickly pass from that state of condensation which might reduce them to rain, into that which converts them into ice, so that as soon as they begin to form very small drops of water, the particles freeze, and many of them touching one another compose flakes of snow.

When the drops, already beginning to descend, meet with a very cold air which freezes them, they form hail : the difference between that and snow proceeding from the circumstance of the clouds being more or less condensed at the moment in which the congelation took place.

Thunder and lightning are produced by the electrical fire contained in a cloud, which bursts forth in flashes and causes a tremendous noise by its explosion. The thunder however is no more than a mere sound productive of no bad effect, the lightning is the destructive agent. It flies with incredible velocity from the clouds to the earth through every thing that falls in its way ; and is attracted by high trees, lofty and spiry edifices, and every kind of elevated and pointed object, as also by most metals, especially iron. The precaution proper to be taken in a thunder storm is to avoid taking shelter under a high tree, or any lofty building, (an oversight which has proved fatal to numbers), and to chuse a situation at the distance of about thirty or forty feet from such elevated object, that by its attraction will almost infallibly draw the lightning from the person so placed and ensure his safety. This is an observation which

is founded on reason, confirmed by experience, and merits attention.

The water of which the clouds are formed, and which descends in rain or snow, is evaporated from the sea. The attractive heat of the sun is the cause of this evaporation, which is more copious in warm than in cold climates. The evaporation from the Mediterranean is so great that although a number of large rivers discharge themselves into that vast reservoir, besides the copious influx of water from the Euxine, through the Bosphorus and Hellespont, it has need of a large supply from the ocean, which it receives through the Straits of Gibraltar. Thus it appears that the Mediterranean, which receives by so many entrances so great a quantity of water, discharges none but only by evaporation, which is far less copious from that sea than from those of the torrid zone. Indeed Mr. Halley has demonstrated that the vapours, which rise from the sea, and are carried over the earth by the winds, are sufficient to supply all the water which falls on the surface of the globe, and gives rise to its innumerable rivers and springs.

Thus you see, my dear sir, that all the constituent parts of the universe are in continual motion. The earth and other planets, by moving round the sun in their annual revolution, cause the diversity of seasons, while, by revolving at the same time on their own axis, they enjoy the alternation of day and night, periods of action and repose to their inhabitants. The beneficent Creator has afforded us the means, of investigating the result of natural causes, so far as they relate to this terraqueous globe, and so far as this knowledge is requisite to our well-being. The winds purify the atmosphere, prevent its stagnations, refresh us with their cooling breezes, waft our vessel to distant climes, and assist us in the management of mills and a number of other useful engines. The sea, by its evaporations, supplies us with water, which, after being purified from its saltness by its suspension in the air, descends in showers to fertilise our

fields and produce vegetation, to generate springs which furnish us with water, a substance indispensably necessary to all vegetable and animal existence, and form rivers serving as canals for the conveyance of merchandise and affording an easy communication between distant provinces.

It would, my dear sir, very far exceed the limits of a letter, or even a volume, to point out the perfect adaptation of causes to effects, and of means to ends, every where visible in this portion of the created system with which we are acquainted. I shall, in this place, make only one observation of the wonderful and well adapted proportion between the sun and those vast bodies which revolve round that great central source of light and heat in our system. With regard to this globe which we inhabit, it is evident that had it been much smaller it would not have sufficed for the reception and support of that numerous and varied assemblage of beings to whom the diffusive goodness of a benevolent Creator, after having conferred on them the blessing of existence, assigned the earth for their destined abode. Had the sun been less, it must have been much nearer to afford us a portion of light and heat suitable to our nature and our wants; but in this case the equatorial regions only could have been warmed, while the rest would have been bound up in eternal frost; or if it had been placed near enough to communicate a genial warmth in higher latitudes, the countries nearer to the equator must have been perpetually scorched with excessive and insupportable heat. It is also not less easy to demonstrate the propriety of the spherical form of those immense bodies than the just adaptation of their distances. If we could with equal facility extend our observations to the other planets which compose our system, and were acquainted with the nature and the exigences of their inhabitants, we should undoubtedly discover that their distances from the central luminary are perfectly adapted to these circumstances. From the perfect symmetry of those parts of the universe which lie within the sphere of

our observation, we may form an idea of that which prevails throughout the whole magnificent fabric ; and although our knowledge of the heavenly bodies be very limited and imperfect, we know enough to convince us that nothing less than infinite power, acting in concert with infinite wisdom, could have formed such ponderous orbs, assigned their places and marked out their revolutions in a manner so conducive to the harmony of the universal plan.

As I cannot conclude more appropriately than by recommending to your attention these sublime considerations, I beg leave to subscribe myself,

Dear Sir, your's, &c.

LETTER VIII.

" Whole buried towns support the danger's heek."

YOUNG.

DEAR SIR,

AMONG the numerous phenomena of nature, which on every side excite our curiosity and stun us with admiration, we cannot but take particular notice of earthquakes, and the tides. The former are irregular and uncertain, and their causes but imperfectly known : the latter are regular and their causes, although long unknown, are now fully ascertained.

From whatever cause earthquakes may proceed, history affords numerous instances of their destructive effects. Pliny, in his first book, p. 84, relates that an earthquake which happened in the reign of Tiberius, destroyed twelve cities in Asia. In the reign of Trajan, the town of Antioch, and a considerable part of the adjacent country, were swallowed up by an earthquake. In the reign of Justinian, about A. D. 528, that city was again destroyed in a similar manner, on which melancholy occasion more than forty thousand of the inhabitants perished ; and sixty years after it suffered the same calamity from a third earthquake, with the loss of sixty thousand people. In the time of Saladin, who was contemporary with

Richard III. king of England, Jerusalem, and most of the towns of Syria, experienced the same disaster. In the pontificate of Pius IX. all the churches, palaces, and other large buildings of Naples were overthrown by an earthquake, and above thirty thousand persons lost their lives ; and it may here be observed, that the province of Calabria, and the island of Sicily are more subject to earthquakes than any other parts of Europe, although several other countries have experienced their dreadful effects. In 1632, there was an earthquake which shook the whole island of Jamaica to its foundation, and totally overwhelmed the town of Port Royal, so as to leave, in one quarter, not even the smallest vestige remaining. The earth opened, and in two minutes swallowed up nine-tenths of the houses and two thousand people. This earthquake extended into England, Holland, Flanders, France and Germany. The dreadful destruction of Lisbon, A. D. 1755, is too recent to be obliterated from the memory of numbers of the present inhabitants. If you search the records of history, you will find that these here mentioned are only a small number of the tremendous earthquakes which have shaken the different parts of this globe. You will also observe that they both happen more frequently and are more violent and destructive in warm than in cold countries, and that they are very rarely experienced in those which are low and marshy. This may probably proceed from the latter containing or attracting a less quantity of the electric fire and these circumstances would induce an impartial reasoner to suppose that both Dr. Stukely's and M. de Buffon's theories may be right, and that earthquakes may sometimes be caused by subterraneous fires, and sometimes by the electric fluid. You will, sir, also observe that the divine Being who has undoubtedly for the most beneficial purposes, ordained the intermixture of evil with good in this probatory state of mortal existence, can exhibit a terrific display of his power in the convulsions of nature, as well as the mild and beneficent effects of his wisdom and goodness in its productions and embellishments.

The ocean, my dear Sir, you well know is that immense collection of waters which covers the lower parts of the surface of this globe. When viewed from the land, it presents a grand and sublime spectacle to the eye of the observer. It is in some parts of a great depth; it is even said, that there are places where it is more than a mile deep; but these are few and the most general profundities are from sixty to an hundred and fifty fathoms. The surface of the ocean is considerably more extensive than that of the land; but the exact proportion is not known. A superficial caviller might here make this objection against the harmony of things:---“Why this profusion of water? why this vast extension of its surface? if so great a quantity of water were necessary, might it not be confined within a deeper gulph, and so cover a less considerable part of the globe?”---To this problem philosophy would give a ready answer. You are already informed, that the waters, evaporated from the sea, and carried over every part of the land by the winds, are essential to the support of vegetation, and regulated by profundity, but by extent of surface; consequently, if the waters of the ocean were less diffused, the evaporation would be much less copious, and therefore inadequate to the supply which the earth demands. Here, then, is another proof of the wisdom of the Creator.

In regard to the purposes of commerce, and the means of communication between distant nations, the waters could scarcely be more judiciously disposed. Seas intersect large continents, and multiplying their maritime ports, give a great extent of coast to different countries, while the various rivers open a passage into their interior provinces. If we cast our eyes on a map of the world, and contemplate the excellent disposition of land and water, we shall find ourselves obliged to confess, that it is scarcely possible to conceive a more judicious and beneficial, or a more beautiful and picturesque arrangement.

The ocean, although it contains innumerable species and forms of animal life, yet being one continued

fluid, is not embellished with that variegated scenery which adorns, and every where diversifies, the earth. The sea, however, is not without its wonders, which proclaim the power and wisdom of its Creator, and of which the tides are the most conspicuous and remarkable. The waters of the ocean have, from the most remote antiquity, been observed regularly to swell and subside twice in about twenty-five hours; but the cause of this phenomenon continued during many ages undiscovered. Our great philosopher, Sir Isaac Newton, has, however completely unveiled the mystery, established the theory of the tides upon the basis of demonstration, and proved in the most luminous manner, that they are caused by the attraction of the moon; for the waters, immediately underneath the moon, will, by the force of attraction, be drawn upwards, and consequently swell, and gradually rise from the horizon, while those on the opposite side of the globe, being but feebly attracted, will likewise swell.---If you were better acquainted with cosmography, and the philosophy of attraction, I might further explain this by saying, that wherever the moon is vertical, or directly over a place, the waters will swell by reason of its attractive powers drawing them upwards; those in the opposite part of the globe, having no attraction but towards the centre of the earth, will be light, and consequently swell upward; and those which are at the distance of ninety degrees from each of the opposite points, will naturally flow towards the swelling parts of the ocean. If you do not at present, you, will, I doubt not, my dear Sir, soon comprehend these matters, when you are a little more advanced in the knowledge of philosophy. From this sketch you will, however, perceive, that the moon, by revolving round the earth once in twenty-four hours, produces two tides.

These tides must naturally flow from east to west; for they must necessarily follow the moon's course in its revolution. The course of the tides is, however, in many parts of the globe, intercepted by continents

and other extensive tracts of land, which consequently give it a contrary directiōn.

In rivers the tides can flow only in a certain direction. Entering their mouths from the sea, and confined within their banks, they must flow upward, and sometimes meeting the current, especially in narrow rivers, cause a great and rapid swell by forcing their waters to flow backward. An example of the astonishment which the observation of this natural phenomenon formerly caused, and a proof of the importance of the study of nature, are afforded in a memorable historical transaction. A fleet, equipped by Alexander the Great, and commanded by his admiral, Nearchus, having sailed down the Indus to the Persian Gulph, the Grecian mariners, who had been accustomed only to the navigation of the Mediterranean and the Ægean Sea, or Archipelago, where tides are unknown, were equally surprised and terrified on observing the flux and reflux of the water at the mouth of the Indus; and regarded this phenomenon as an unluckly omen, and a decided mark of the displeasure of the gods against their expedition. Thus is it, that ignorance is the parent of superstition, which converts the ordinary appearances of nature into portentous prodigies, and torments with groundless fears the minds of those who are unacquainted with the various operations of nature.

With this important observation permit me to conclude this epistle, in order to prepare for the exhibition of a novel scene:---the display of animated nature; the contemplation of which will furnish you with a copious fund of knowledge, and an ample source of amusement.

With every sentiment of affection and esteem,
I am, dear Sir, Your's, &c.

LETTER IX.

" By thee the various vegetable tribes,
 Wrapt in a filmy web, and clad with leaves,
 Draw the live æther, and imbibe the dew ;
 By thee dispos'd into congenial soils,
 Stands each attractive plant, and sucks, and swells
 The juicy tide ; a twining mass of tubes,
 At thy command, the vernal sun awakes ;
 The torpid sap, detruded to the root
 By wintry winds, that now in fluent dance,
 And lively fermentation, mounting, spreads
 All this innumerable coloured scene of things."

THOMSON.

DEAR SIR,

HAVING viewed the magnificent structure of the heavens, and remarked the motion and magnitudes of those celestial orbs, that make their ceaseless revolutions in the immeasurable regions of æther, we have afterwards descended to the earth, this habitation of human and animal beings, and the only part of innumerable systems, with which we are properly acquainted, and to which our physical knowledge can with certainty be extended.---We have observed the surface of this terraqueous globe ; its division into land and sea ; its mountains and volcanoes ; its concussions by earthquakes ; its irrigation by rivers and springs, by rains and dews ; and the exhalation and descent of those vapours which fertilize the soil, cover the fields with plenty, and crown the labours of the husbandman.

Before we begin to take a range among the various orders of beings which inhabit this globe, it will not, my dear Sir, be amiss to cast a glance on vegetation, by which all animal life is sustained. It would, indeed, be a pleasing occupation to view it in all its endless variety, and to delineate all its diversified scenery ; to investigate the vegetative principle ; to discriminate its productions in different soils and climates ; to exhibit the fascinating beauties of trees and plants, of flowers and fruits ; to describe their texture, examine their properties, and es-

timate their utility. On this subject numerous folios have been written, and it is yet so far from being exhausted, that it would still furnish matter for a multitude of additional volumes; the limits to which we intend to confine our epistolary correspondence, permit us, however, to indulge our curiosity with no more than a transient view of a subject so interesting and so delightful.

In examining the materials, of which this stupendous whole is composed, you have, my dear Sir, observed, that the bowels of the earth contain a variety of vitrious and calcareous substances, which, by their concretion, form the different kinds of metals, minerals, and stones. Its surface is likewise impregnated with a variety of juices, which being rarefied and put in motion by the action of the sun upon them, give birth to innumerable species of vegetables, which supply both men and animals with food, and embellish the face of nature. Every being that has life draws its nourishment from the earth; for although men live on animal as well as vegetable food, yet the beef and the mutton, the veal and the lamb, that is served up at our tables, consists of the flesh of oxen and sheep which feed on the grass of the field; or of lambs and calves, fattened with the milk of their dams, which are supported by vegetation; and although, as you will see in taking a view of animated nature, numbers of animals live by devouring one another, you will at the same time readily perceive, that those which serve as food for others, are themselves sustained by the productions of the soil, and that the earth, which has for this reason being emphatically called *Alma Mater* the nourishing mother of all, furnishes the universal support of life.

In the propagation, the nutriment, and the growth of vegetables, we see a grand display of the attributes of the Deity, of his almighty power, his infinite wisdom, and his diffusive goodness; but of the theory of this wonderful operation of nature, our knowledge is only superficial. A close inspection into the structure of plants can alone afford ground

for reasoning on the subject; and from this perceive, that every thing which vegetates has a root, and is furnished with fibres. This root even in the largest trees, as well as in the most minute herbs, branches out into extremely small fibres, almost imperceptible to the eye, and numerous beyond calculation; and these are the vehicles through which the tree or plant draws in the moisture of the ground. The fibrous tubes, which run from the root to the utmost extremity of every leaf, and form a tissue more complex, and more nicely interwoven, than the most exquisite manufacture of human art, have received from the Author of nature an attractive, or as it is called by botanists, a vital power, by which they imbibe at the root, and draw up to the top, the moisture necessary for their nourishment.

The all-wise and benevolent Creator has, in the infinitely complex, but perfectly connected mechanism of nature, providently ordained, that different soils and climates should be particularly suitable to different kinds of vegetable productions; that so the deficiencies of one country might be supplied from the superfluities of another. In this wise and beneficial arrangement, the Universal Parent appears to have had in view, not only the physical, but the moral happiness of his children, the great family of mankind dispersed over the whole earth; for by it, trade and social intercourse are promoted, and men, being obliged to have recourse to one another for the exchange of their commodities, and for the obtaining of various conveniences and comforts, find in this mutual dependence a thousand motives to be mutually beneficent.

Several vegetables, however, which are now of universal use, were unknown to our ancestors; and since it is difficult, among so immense a variety of articles, as this department of nature presents, to make a judicious selection, I will endeavour to entertain you for a moment with the description of a few which seem the most interesting and in these parts of the world may

be considered both as natural curiosities, and important articles of commerce.

THE TEA-TREE.

Which is cultivated solely in China and Japan, and there produced in so great abundance as to supply the rest of the world, is a shrub about the size of a large gooseberry-bush, but different in form, having a single stem about the thickness of a man's arm. It has many branches, and its leaves, which resemble those of the sour cherry, are always green. It flourishes in autumn, and produces a small fruit less than a hazelnut. While the leaves are fresh they have no smell; but when chewed have a bitter taste. As soon as they are gathered, they are placed on hot plates of iron, and while they are still warm are rolled with the hand upon mats, in order to preserve them. By this process they lose their nauseous bitterness, and acquire an agreeable smell, with a taste somewhat aromatic.

The tea-tree usually attains its full size in about seven years, and its leaves are not plucked until the third year, at which period its crop is not only the most abundant, but also of the best quality. The leaves are afterwards gathered one by one with the greatest care, twice or thrice in every year. Towards the end of February, or the beginning of March, the shrubs are visited daily, and all the young leaves plucked as soon as they appear. The tea thus gathered is the best, except that which consists of the lightly-opening buds, that appear only at the ends of the branches, and is preserved for the emperor, and persons of the highest rank in China and Japan. The second crop or gathering, which with many cultivators is the first, begins about the end of March, or the beginning of April, when almost all the leaves are completely developed. The third and last, which is the most abundant, but the worst in quality, takes place in the beginning of June, when the leaves are both the largest, and in the greatest quantity. At each gathering the leaves are carefully sorted according to their different sizes, in order to have teas of

various qualities and prices. The particular denominations of Hyson, Souchong, &c. are the names of the provinces or districts, where the teas are produced. These names, however, are, especially among foreigners, applied without any great degree of accuracy.

Tea is a luxury that was unknown to the ancients and voluptuous Romans, who, in their superb and luxurious feasts, sometimes expended the enormous sum of 4843 pounds sterling on one single dish, (Pliny, lib. x. ch. 17. 35.) never regaled themselves with a cup of this beverage, at this day so common in every cottage throughout England. It was not till the fifteenth century that it became known to Europe. Since that time above ten millions of pounds are annually imported, and the Chinese draw an immense revenue from its sale ; so that in this curious and remarkable plant, you may, my dear Sir, contemplate an important and interesting article of trade, and domestic economy.

COFFEE

May be ranked next to tea, with respect to its importance as an article of food and commerce. This plant is a native of Arabia, and formerly grew only in that country. It was introduced into Italy by the Venetians about A. D. 1624, and is now very much cultivated in the West Indies. The coffee-tree in its native country rises to the height of forty feet, but in other parts of the world seldom exceeds the half of that height : its trunk or stem is never thicker than a man's leg. The berries are attached to a little stalk, and enclosed by two together in a shell. This shell is also enclosed in a fruit of a pale red colour, and somewhat resembling a cherry.---The berries are gathered twice or three times in a year.

The best coffee is brought from Arabia. The next in quality is produced in different parts of Turkey ; but quantities are imported from the West Indies. In some countries of the European continent, coffee is much more used than tea. The Turks in particular consume an amazing quantity of it ; and it would be

difficult to say, whether the coffee-drinkers or tea-drinkers are the most numerous, or which of the two articles has the greatest consumption.

THE CACAO

Is a pretty large tree, always bearing flowers and leaves. Its fruit from which chocolate is made, is almost as large as a cucumber, and has nearly the same shape: but the shell is divided like the rind of a melon. These shells are filled with pretty large nuts or seeds, to the number of thirty or forty in each shell, and which are enveloped in a kind of white pith, of an agreeable taste. The nuts being toasted are afterwards pounded, and made up into the paste called chocolate, which is more nourishing, and esteemed more wholesome, than either coffee or tea. The Spaniards first introduced it into Europe, A. D. 1529; and since that time, until 1646, they and the Portuguese were the only people among whom it was used. Afterwards it became known to other nations, and about A. D. 1680, it began to be an article of commerce. In using either tea, coffee, or chocolate, sugar is among us reckoned an almost indispensable ingredient, although the Chinese never mix it with their tea. Its general use, therefore, in this country inclines me to suppose, that it would be pleasing to you to acquire some knowledge of the plant from which it is produced.

THE SUGAR-CANE

Is a reed which grows to the height of nine or ten feet, and the thickness of a strong walking cane. It is encircled with knots, at the distance of four or five fingers' breadth from one another, and from each of these a leaf is produced, which falls as the cane ripens. When completely ripe it is cut down, and pressed with rollers, in order to squeeze out the juice, which is instantly-boiled to prevent its turning sour. After being boiled to a certain consistency, it is imported from the sugar colonies to Europe, and afterwards refined by various methods in our sugar-houses.

This highly valuable plant is cultivated in the island of Sicily, in the kingdom of Naples, in Spain,

and with great success in several parts of Asia and Africa ; but the greatest quantity is raised in the West Indies, and from thence the principal part of our sugar is imported. It has already been remarked, that tea was totally unknown to the Greeks and the Romans, and, very probably, to the Egyptians, Babylonians, and Persians, as well as to all the nations of Europe, until towards the close of the fifteenth century. Coffee and chocolate were equally unknown to the ancients ; and before the improvements in navigation, and the extension of commerce, sugar, which now is so plentiful, and so common among all ranks of people, was so scarce and dear, as to constitute an article of luxury to be found only at the tables of the opulent. The Romans, when masters of the best part of the world, and possessors of the greatest part of its wealth, were totally ignorant of many of our luxuries, while they indulged in others beyond comparison more expensive. Such are the changes of circumstances, and modes of living in different ages.

THE COTTON-TREE

Is another of those foreign plants, which, on account of its great commercial importance, is worthy of particular notice ; especially as every one in this country is acquainted with the various manufactures of cotton, while so very few have any knowledge of the tree which produces the materials, which employ so great a number of hands, and from which so many useful and elegant articles of clothing are made. The cotton-tree grows in both the East and West Indies. It is from eight to ten feet high, and is very much tufted at the top. It bears a flower, in shape resembling a bell. There is afterwards produced a nut, which encloses the seeds of the tree, and around these the cotton is wrapped. The tree is always propagated by its seeds, and never planted. Every branch is cut off when it has produced its cotton, and every third year the trunk is cut up close to the ground, that new shoots may be produced. By this means the tree is

renovated, and the cotton becomes finer. There are every year two crops, one in the spring and another in the autumn. Mills are employed to separate the cotton from the seed ; after which it is packed up in sacks, being well moistened and strongly compressed. The spinning, weaving, and dying, of this valuable material, provides employment and support for great numbers of people ; and the cotton trade, considered in all its branches, is esteemed of great importance both to the old and new world.

To describe, or even to enumerate, the beauties and the wonders of the vegetable kingdom, would far exceed our limits ; and indeed, it would scarcely be possible to exhaust the subject. No part of the creation is embellished with more splendid ornaments, or diversified with greater variety.

To form just ideas of the diversified scenery which vegetation exhibits, you must, my dear Sir, transport yourself in imagination into different countries and climates, and view the different liveries which nature wears. You must make an ideal excursion into the northern regions, and view the immense forests with which many parts of them are covered. From thence you must traverse in thought the more temperate climates, and survey the waving crops and ripening harvests ; the delightful vineyards ; the meadows, embellished with flowers : and the fertile pastures covered with various kinds of cattle : all exhibiting an endless variety, and flourishing under the influence of genial skies. But to view nature in her most gorgeous attire, you must proceed to the tropical regions. There a luxuriant vegetation displays itself in all the splendour of florid magnificence, in all the variety of forms, and all the brilliancy of colours. Forests adorned with various kinds of trees ; flowers exhibiting a thousand different tints, and flourishing in constant succession, under an invigorating sun, without ever being checked by the chilling cold of winter, astonish and delight the eye.

Could these ideal peregrinations, my dear Sir, be

realized, you would in one place see the aspiring pine, and the majestic oak; and in another, the lofty cedar, which, according to the information given us by holy writ, formerly crowded the mountains of Libanus, or Lebanon, and still constitutes the ornament of those of the warm countries of America, as well as of some other parts of the world. You would reflect on the utility of those magnificent productions of nature, for building and other purposes. You would also view with pleasure, the twisting vine, and make agreeable reflections on the exhilarating and beneficial effects resulting from a moderate use of the juice of the grape, and on the disorders arising from intemperance. You would feel yourself impelled to express your gratitude to the Almighty Donor for the number and excellence of his gifts, and conceive an abhorrence of ungratefully and impiously abusing them by immoderate excess. In a word, my dear Sir, you would, in the different regions of the globe, contemplate with astonishment the endless variety of nature, and the profusion of ornaments with which the Omnipotent Creator has decorated this superb mansion, designed for the temporary abode of man. The earth is an immense garden, laid out and planted by the hand of the Deity: the lofty mountains and waving forests are its terraces and groves: fertile fields and flowery meadows form its beautiful parterres.

Reluctantly taking leave of so delightful a subject, I am sensible that you will also feel the same regret; but I shall soon have the pleasure of consoling you with a view of those interesting scenes which animated nature every where presents to the eye of contemplation.

With every wish for your intellectual and moral improvement, and for the increase of your rational pleasures, I am, dear Sir,

Your's, &c.

LETTER X.

" Know then thyself, presume not God to scan,
The proper study of mankind is man ;
Placed in this isthmus of a middle state,
Not basely mean, not yet superbly great."

POPE.

DEAR SIR,

IN a survey of animated existence, it is requisite to begin by a view of our own species, and in the first place, to contemplate Man, the lord of this terraqueous globe, which the All-wise Creator has assigned him for his abode ; having endowed him with powers and faculties, by which he is enabled to render the rest of its inhabitants subservient to his interests.

Man is a wonderful creature, and being a compound of body and mind, has frequently been considered as that link, in the great chain of beings, which connects the material and the intellectual world ; as he partakes of the nature of both, and unites in himself the properties of animal and rational existence. His mental powers directing the exercise of his corporeal faculties, enable him to render inanimate Nature subservient to his use ; and possessing this superiority of understanding over all other creatures, he converts the mildest and most docile animals into useful domestics, and regards the most ferocious as impotent enemies.

All our ideas of external things are conveyed to the mind by the medium of the senses. Without the sense of seeing we could have no ideas of forms or colours, and without that of hearing we could have no conception of sounds ; and the same observation may be made of all our other perceptions. From these simple sensations all our ideas, however compounded, extended, and ramified, originally proceed. Such is the natural operation of an intellectual, united to a corporeal being.

In regard to the bodily powers of man, he surpasses, in proportion to his weight, most animals in strength

and agility, and all in dexterity. In all these particulars, however, habit has a great and remarkable influence.---Constant exercise is requisite to invigorate the human body ; and the strength of man is very considerable, and indeed almost incredible, when thoroughly matured by practice. We are assured, that the porters of Constantinople can carry burdens of nine hundred pounds weight ; and M. Desaguliers informs us of a man, who, standing in an upright posture, by distributing the weight in such a manner that every part might bear its share, supported the incredible weight of two thousand pounds.

Men who are accustomed to running, can in length of time outstrip horses. The royal messengers of Ispahan, who are runners by profession, can go above an hundred miles in fourteen or fifteen hours ; and some travellers tell us, that savages, who hunt the elk, pursue with such speed and perseverance that animal, which is as fleet as a stag, that in time they tire it down. Whatever may be the degree of credit due to these relations, we have well-authenticated accounts of Indians, in South America, who have carried dispatches from Buenos Ayres, on the river Plata, to Lima, across immense forests, and over the rugged and almost impassable mountains of the Andes, with a celerity equal to that which is attributed to the runners of Ispahan, and absolutely incredible, were not these performances repeatedly exemplified, and the veracity of these accounts sanctioned by the highest authority. Man, in a civilized state, is ignorant of his strength, and of the degree to which it might be augmented by habitual and vigorous exercise. The constitution of man is stronger than that of most animals, and few of them equal him in longevity. He is an inhabitant of every climate, and can by early habit accustom himself to live on almost every kind of food. The human frame is so constituted, as to last ninety or an hundred years, and if not shortened by accidental causes, this appears to be the ordinary duration of the life of man. Moderation of the passions, sobriety, temperance, and exercise, are the surest pre-

servatives of life, and may even protract its period for many years : but no art or management can extend it much beyond the ordinary limits of its duration, which has continued the same ever since the days of David, or perhaps longer ; and where we meet with instances of extraordinary longevity, of which there are several persons having reached to an hundred, or an hundred and twenty, and some few to an hundred and fifty years and upwards ; these appear to have been the effects of constitution rather than of any particular mode of living.

That all mankind, however scattered over the globe, are originally descended from one parent stock, the identical uniformity of human nature, and the identity of its distinguishing characteristics in every age and country, and among every race of men, sufficiently demonstrate, even if sacred writ had not sanctioned the hypothesis. The influence of climate, civilization, particular modes of life, and a variety of causes, some of which are obvious, and others more concealed, have, however, produced many and striking diversities in the exterior appearance of the human form.

Although many varieties of stature, colour, and countenance, may be discovered among tribes and nations, as well as among individuals, yet they are for the most part too trivial to constitute marked distinctions ; and Buffon, whose example is in this particular followed by most of our naturalists, has divided mankind into six great classes, sufficiently diverse, yet without any such distinctions as can indicate a different original. The difference observed in their exterior appearance, or intellectual powers, is evidently produced by the operation of physical and moral causes.

The polar regions exhibit the first distinct race of mankind. The Laplanders, the Samoieds, the people of Nova Zembla, the Kamtchadales, the Greenlanders, and Esquimaux, constitute a race of people nearly resembling each other, and different from the rest of mankind in stature and complexion, as well as in modes of life and intellectual acquirements. Li-

ving under a rigorous climate, and feeding on particular aliments, their stature seems to have been affected by the hardness of their fare, as well as their complexion by the extremity of the cold.

The productions of nature being few, and the conveniences of life difficult to procure, their only employment and study have constantly been to supply its urgent wants, of which the incessant recurrence has left them no leisure for intellectual improvement. It is, therefore, no wonder that their manners are as uncultivated, as their appearance is uncouth. Their stature is diminutive, and their aspect forbidding. The tallest among them seldom exceed the height of five feet, and many are not more than four. Their faces are broad, with the nose short and flat; the eyes of a yellowish brown, the cheek-bones high, the lips thick, and the voice generally weak and effeminate. Their heads are large, with the hair black and lank, and their complexions a deep brown, upon which extreme cold seems to have had nearly the same effect as intense heat on that of the inhabitants of more southern climates. It is almost needless to remark, that among these people feminine beauty is unknown. The conformity of manners among those arctic tribes is not less marked, than their resemblance in stature, complexion, and features. They are equally ignorant and superstitious. Their religious ideas are few, and for the most part extremely absurd. They are totally unacquainted with civilized life, and covet none of its conveniences or luxuries, except tobacco and brandy, to the use of which they are immoderately addicted, and, which they procure by bartering for them, with their southern neighbours, the furs of the ermine and other animals; the hunting of which constitutes a great part of their employment. Although these people are strangers to every art and science, and appear incapable of any vigorous efforts of body or mind, yet they display considerable ingenuity when stimulated by necessity, as well as great strength, activity, and courage, when inevitable difficulties or dangers prompt their temporary exertion.

Those hyperborean nations, however, notwithstanding their diminutive stature, possess a considerable degree of strength, which, matured by habitual exercise, enables them to undergo incredible hardships. Providence also, in denying them so many blessings, which the inhabitants of more temperate climates enjoy, has given them contentment as a counterbalance for these privations ; and so strongly are they attached to their native country, an immense extent of mountains and morasses, that they esteem it a terrestrial paradise, and cannot reconcile themselves to any other situation, nor domiciliate themselves in any other part of the world. In this attachment of the Laplanders is verified the assertion of Pope :

“ All gracious Providence is good and wise,
Alike in what it gives, and what denies.”

The disposition of these northern tribes is singularly pacific ; and, although attempts have been made to draw them out into the field, and discipline them as soldiers, every measure taken for that purpose has proved unsuccessful. War is the object of their detestation : indeed they have nothing worth contending for, and set so little value on the wealth, the power, and the luxuries of civilized nations, that they cannot conceive how they should be thought of sufficient importance to be the subject of contest. Among all the riches and luxuries which the civilized world displays, nothing in their opinion, except brandy and tobacco, are worth a moment's dispute.

The second great variety in the human species is the Tartars, from whence, in all probability, the inhabitants of the hyperborean regions originally sprung. Tartary comprises a very considerable part of Asia, and is peopled by various tribes of different features and complexions, approximating to each other, by shades of difference, more or less perceptible, but all of them retaining those leading traits of distinction, which discriminate the whole race from any other nation. All the Tartars have the upper part of

the face broad and wrinkled, even in youth, the lower part narrow, and inclining to a point at the chin. Their noses are short and flat, their cheek-bones high, their teeth large, their eyebrows thickset, their hair black, and their complexion olive. They are of a middle stature, strong, robust, and healthy. Of all the Tartar tribes the Calmucs are the most ugly, and have the most savage and terrific aspect; but neither the features nor complexion of any of these nations correspond with our ideas of beauty.

The Tartars, although widely disseminated, all lead an erratic life. They build no towns, nor cultivate any ground except for the production of a little millet; but live in tents, covered with skins. Their food is horse or camel's flesh, which they often eat raw, and their usual beverage is mare's milk, fermented with ground millet. Their chief wealth consists in their horses, in the management and care of which a great part of their time is employed. They practise robbery as a profession, and think it neither dishonourable nor criminal, provided that it be exercised on a different tribe. The men have very little beard, and shave their heads, except one lock, which they braid into tresses, so as to hang down on each side of the face. Although the women can scarcely boast of more beauty, than the men, they are studious to braid the hair, and decorate it with bits of copper, and other ornaments of as little elegance. Some of the Tartars are Mahometans, some profess the religion of Thibet, and acknowledge the divinity of the grand Lama; and some of these wandering tribes appear to have scarcely any religious ideas, except that they acknowledge one Supreme and eternal Being.

In this class of men may be included the Chinese and the Japanese. The general contour of features, and cast of countenance of these people, evidently shew that they are of Tartar origin; and the dissimilarity of manners, customs and habit of life, is undoubtedly the effect of civilization, and the moral influence of political institutions. Chardin, from his

own observations, assures us, that "among all the people, from the east and north of the Caspian Sea to the peninsula of Malacca, the lines of the face, and the formation of the countenance, are the same." This assertion seems to be too positive, as well as too general, on so vague a subject as the conformation of the human countenance, among so many myriads of men spread over so vast an extent of country. The most eminent travellers, however, seem to think it most probable, that not only the Tartars, the Chinese, and the Japanese, but also the Cochin Chinese, and the Tonquinese, as well as the nations beyond the Ganges, are of the same race, and proceed from one common origin.

The southern Asiatics are generally considered as the third great variety of the human species. They resemble the Europeans in stature and shape, as well as in features, although they are very different in complexion, which is olive, and lighter or darker, in proportion as they are more or less distant from the equator. The Hindoos are remarkable for their total abstinence from animal food, the natural effect of their belief of the metempsychosis, or transmigration of souls, which constitutes one of the leading tenets of their religion. The women have nearly the same features as the men, and are elegantly formed; but their constitutions seem to be extremely delicate. They arrive early at maturity; but their beauty soon fades, and before they attain their thirtieth year they begin to feel the encroachments of age. Indolence and voluptuousness are among those people the most prevalent vices, and humanity the most distinguished virtue.

The Negroes constitute the fourth and most distinct race of men. The different Negro nations are diffused over the greatest part of southern Africa, from the eighteenth degree of north latitude to the same degree on the south side of the equator. Except the Abyssinians, who are olive-coloured, this extensive tract of country is wholly occupied by the black-complexioned race.

The Negroes are not more remarkable for the sable colour, than for the delicate smoothness of their skins.---Their eyes are of a deep hazel ; their noses flat and short, their lips thick, their teeth of a beautiful whiteness, like ivory, and their hair soft, short, and woolly. Those of Guinea are reckoned the most ugly, and those of Mosambique the handsomest. The Negroes have often been represented as indolent, mischievous, and revengeful ; but these vices are not found to characterise them in their own country, nor, indeed, in any country where they enjoy liberty and good treatment. On the contrary, if we form an unprejudiced judgment of their character from the most authentic and impartial information, they appear to be a remarkably innocent and inoffensive people. To their children, their friends, and their country, they have the tenderest attachment, and are ever ready to give a part of what little they possess to those who are in necessity or distress. Let us not view the Negro character through the medium of interest or prejudice ; let us contemplate it as exhibited by our illustrious countryman, Mr. Park, who travelled defenceless, unattended, and alone, to the distance of many hundred miles in the interior of Africa ; and during the whole of his peregrination in those unknown regions, where no white man had ever been seen before, found the unpolished inhabitants uniformly inoffensive, compassionate, and kind. Can we refrain from lamenting their hard fate, in being torn from their native country, and carried into perpetual slavery ? Their sufferings certainly demand a tear.

The aboriginal Americans form a fifth race of men, not less different in colour, than distinct in habitation, from the rest of mankind. All these savage tribes, except the Esquimaux, who resemble the Laplanders, and other hyperborean nations of the old continent, are of a red or copper colour. In the whole world, diversity of climate never fails to produce difference of complexion ; but among the original tribes of America that effect is not perceptible ; and among

the various nations dispersed over that extensive continent, scarcely any variation can be found in the colour of the skin, and less than might be expected, in the formation of the body, and the contour of the features. All have high cheek-bones, flat noses, and small eyes : all have thick, black, and lank hair, and their beards are remarkably thin. Both men and women paint their bodies and their faces ; and in this particular, among some of the tribes, fashion and taste seem to be as much studied as in the various modes of dress among civilized nations.

The original natives of America are more pusillanimous than the Europeans ; at least, they are more backward in facing danger. This, however, may proceed from the circumstance of their having fewer inducements to spirited enterprize. Their habitual difficulties and wants render them patient in adversity. Whether their patience may be considered as the effect of habit, or a mark of fortitude, it is certain that the greatest philosopher cannot possess in a more eminent degree the art of maintaining an appearance of magnanimity in the midst of distress and sufferings. Although less enterprising than the Europeans, and more fearful of exposing themselves to danger, yet, no sooner does it appear unavoidable, than their courage is excited to the highest pitch that can be imagined. They are then ready to suffer, as well as to inflict, the most cruel tortures, and either through native fortitude, or the influence of custom and education, manifest a stoical apathy in the midst of the most dreadful torments. Like all savages, they have a grave and serious deportment. To those of their own tribe they are uniformly kind and just, but invariably cruel to their conquered enemies. Circumstances have an irresistible influence in the formation of character ; and an independent, precarious, and uncivilized state of life produces a peculiar assemblage of virtue and vices. Patience and sincerity, indolence and rapacity, warm attachment to friends, and implacable animosity to enemies, mark the savage character in every part of the world.

The aboriginal Americans, although many of their tribes are equal to the Europeans in stature, are less muscular and strong, which is probably an effect of the climate in conjunction with the scantiness or bad quality of their food. The wan and flaccid appearance of the descendants of the Europeans settled in America, shew that the influence of the climate, or the productions of the soil, are less favourable to the human constitution than those of the old world.

The sixth and last marked division of the human race, and the most elevated in the scale of terrestrial beings, comprehends the people of Europe, with some of the adjacent countries. In this class may be included the Georgians, the Circassians, the Mingrelians, the people of Asia-Minor, and those of the northern parts of Africa. Among so many different nations, dispersed over countries of so great an extent, a considerable variety of complexion and countenance must undoubtedly be found; but yet this diversity is less than might be expected.---All in general have nearly the same stature; and the same general contour of features. The colour of the skin in all these nations is also the same, and the difference often found in the tints of the face, is, for the most part, no more than the effects of a greater or less exposure to the weather, which may often be observed among individuals in the same district, as well as among the inhabitants of different countries.

According to the information of travellers, the Circassians are the most personal people in the world. A complexion incomparably fine, eyebrows black, soft, fine as silk, and thickly planted; eyes blue, large, and full of animation; with a mouth and chin exquisitely formed, are the characteristics of the Circassian females, with whom may be ranked those of Georgia and Mingrelia. Their stature is tall, their shape elegant, and their hair of the most beautiful black. Yet these people live under the same climate with the Tartars, who fall exceedingly short of the standard of European beauty. In this respect they exhibit a similar phenomenon with the Abyssinians,

who, from time immemorial, have lived under the same parallels as the Negroes, to whom they bear scarcely any resemblance, either in features or complexion, and are olive-coloured while they are almost surrounded with nations of the blackest hue. From these circumstances it seems, that, although the climate has unquestionably the greatest influence on the human complexion, the productions of the soil must in some measure contribute to those effects, which are often ascribed solely to the former cause. Although the difference of climate, of aliment, and mode of living, unquestionably produce those varieties which exist in the human race, yet it is certain, that we are in a great measure ignorant of the manner and extent in which many of those causes operate, and the science of physics has hitherto been unable to unravel the complication. All that we know is, that a certain proportion and quality of aliment, in conjunction with a certain temperature of the atmosphere, are requisite to bring the human form to perfection, and that it degenerates wherever nature or fashion has induced defect or deviation. Various circumstances also evidently shew, that these characteristic distinctions, which mark the different races of men, can have been produced only by the continued operation of the same causes through a long series of ages.

The inhabitants, however, of most countries, especially of those which are flourishing in commerce, or celebrated in history, are a mixture of many different nations. In these, commercial or hostile intercourse has in a great measure obliterated national distinctions. It is among those nations that have seldom been invaded, or visited by foreigners, and who have maintained but little intercourse with the rest of mankind, that we find these distinguishing characteristics of person and manners most deeply impressed.

Of all the colours which diversify the human species, white is, at least according to our standard of estimation, the most beautiful; and it undoubtedly gives the greatest degree of expression to the coun-

tenance, which in the sable African, or the olive-coloured Asiatic, is a far less distinct index of the mind than in the fair-complexioned European.

From this general survey of the human race, it appears to be not without reason, that we consider the European figure and complexion as the standard of elegance and beauty. But if we contemplate the intellectual attainments of the nations of Europe, we cannot but perceive their decided superiority over all the other people on the Globe. Arts imperfectly practised, and sciences totally unknown in the other quarters of the world, are in Europe brought to the highest perfection, and every kind of mental improvement is an object of attention.

In contemplating the faculties of man, and his superiority over the rest of animated nature, you cannot, my dear Sir, but feel your mind expanded with gratitude to the All-bountiful Creator, who has endowed you with those exalted privileges, those superior qualities of body and mind, which you possess; and when you consider the pre-eminency of the European above every other class of mankind, when you observe how Europe is embellished by the arts and sciences, and illuminated by the radiance of Christianity, the grateful emotions of your soul will receive additional force and animation. A celebrated Grecian philosopher used to say, that he thanked the gods that he was not a barbarian but a Greek; and you, my dear Sir, will undoubtedly consider yourself under a still greater obligation, to be thankful to the Supreme Disposer of all events, who has allotted you your station, not among uncivilized savages, but in Europe, where the human mind is enlightened by philosophy and religion; and especially in Great Britain, where the influence of the best of governments renders happy and prosperous a nation in which science flourishes, and liberty reigns,

With unfeigned affection and esteem,

I am dear Sir,

Your's, &c.

LETTER XI.

“ Out of the ground upröse,
 As from his lair, the wild beast, where he wens
 In forest wild, in thicket, brake, or den,
 Among the trees ; in pairs they rose, they walk’d,
 The cattle in the fields and meadows green.”

MILTON.

DEAR SIR,

I AM now about to open to your view an extensive field for observation, in which curiosity may have an ample range, and receive continual gratification without finding its source exhausted. You have long expected to be entertained with a survey of the animal kingdom. I have promised you this satisfaction, and am now about to enter on the pleasing task of fulfilling my promise, and realizing your expectation. I shall begin this survey of animal life with the quadrupeds ; but before we enter on individual description, it may be requisite to exhibit them in a general view.

If we descend by regular gradations, from man, the masterpiece of the terrestrial world, we must for many reasons assign to the quadruped part of the creation the second rank. Whether we direct our attention to the structure of their bodies, or their various and wonderful instincts, to their ability to render us service, or their power to injure us, we cannot but consider them as prominent and interesting objects of curiosity. The internal conformation in quadrupeds is strikingly analogous to that of man, and the general anatomy of the monkey race bears so great a resemblance to that of the human species, that it requires some skill in physiology to make the discrimination. Their instincts seem also sometimes to approximate to the reasoning faculty, and to exhibit an appearance of something like the human passions.---Some of them seem to imitate, or even to rival us, in our most tender affections. What human attachment can exceed that of the dog to his master ? He accompanies him with constancy, guards his pro-

perty with attention and fidelity, and defends his person with courage and zeal. He is eager to obtain his caresses, and docile in obeying his commands. If he has the misfortune to incur his displeasure, he seeks every means to be restored to favour : he testifies emotion and anxiety at his absence, and is transported with joy at his return. Among mankind friendship cannot be more energetically expressed, but is often accompanied with less sincerity.---In a number of other quadrupeds, the operations of instinct are equally remarkable and striking. The mischievous cunning of the monkey, the provident foresight of the beaver, the sagacity of the elephant, excite our astonishment. What can equal the subtle artifices of predaceous animals, in seeking and catching their prey, or those of the weaker and more timid, in eluding the pursuits of the strong and ferocious ? In this, as in all other things, you will, my dear Sir, discover the wisdom of the Creator. Did not the weaker animals use as many means of self-preservation, as the stronger employ for their destruction, the former would soon be exterminated, and the latter would afterwards perish for want of subsistence. Animals, in their original state of wildness and independence, are subject to few alterations ; but those which are subdued, and domesticated by man, undergo through his management considerable changes, both in their figure and dispositions. In the horse, the cow, and several other domestic animals, we perceive a number of varieties, some of which, indeed, are the effects of nature, but more of them produced by art and cultivation. The circumstances of soil and climate have also a decided and well-known influence on the animal race, in varying their size, their colour, or their covering. In the hyperborean regions Nature has furnished the quadruped creation with long and thickly planted hair, but with a lighter and cooler vesture between the tropics ; and those which are capable of being transported from the extreme of cold to that of heat, or the contrary, are found upon experiment to assume a dress adapted to

the climate, a circumstance which shews the wisdom of Providence, in providing for the necessities of all creatures. On the disposition and character of animals, the influence of climate is very perceptible, and more easily ascertained in regard to the brute creation, than the human species. Man is so much the creature of association, imitation, and habit, and so powerfully influenced by moral causes, as to render it impossible to determine in what degree he is affected, or how far his character is formed by those of a physical nature. External impressions are sensibly felt by every thing that has life, and both rational and irrational beings must in a greater or less degree be subject to their influence. If, however, in man the effects of situation, and other physical circumstances, be difficult to distinguish from those of social institution and moral habits, this difficulty does not exist in a view of the brute creation; and the effects of climate and aliment are unequivocal: for between the tropics the same kind of animals are extremely different from what they are in temperate climates; in the former they are more ferocious and daring, in the latter more timid and mild.

After this general survey, I shall endeavour to vary the scene by proceeding to individual description, in which you will find these remarks exemplified, and recalled to your memory. The number of distinct species, in the class of quadrupeds, is usually stated at about two hundred, or two hundred and twenty. Late authors have enumerated two hundred and eighty, and some have even sub-divided them into upwards of four hundred; for in these cases distinctions may be multiplied according to opinion or fancy. You will easily conceive, that amidst your other pursuits, your time would not suffice for a minute investigation of each particular subject. I shall, therefore, endeavour rather to generalize, than enumerate, and without entering into tedious details, exhibit to your view the great and marked outlines of natural history, with which every gentleman ought to be acquainted. In the view of uniting pleasure

with instruction, and agreeable amusement with useful information, I shall bring forward to your inspection such objects as will most evidently display the power, the wisdom, and the goodness of the Great Author of Nature, whose omnipotent word called the universe into existence.

Most sincerely, and most affectionately,

I am, dear Sir,

Your's, &c.

LETTER XII.

"Hast thou given the horse his strength, hast thou clothed his neck with thunder?"

JOB, chap. xxxix. ver. 19.

DEAR SIR,

AMID that interesting variety of quadrupeds, which Nature presents to our view, or provides for our use, the great and well-known utility, and various excellencies of the Horse give him unrivalled precedence, in a view of the brute creation.

Of the numerous species of animals, which infinite Wisdom has ordained to inhabit this terraqueous globe, some are found to alarm us by their terrific appearance, to endanger our safety by their ferocious disposition, and exercise our caution in avoiding their attacks; others, on the contrary, evidently appear to have been created to delight us by their beauty, or increase our comforts by their utility. This noble quadruped, which I now recommend to your attention and examination, without having any of the formidable qualities of the former, possesses all the excellencies of the latter, uniting in his form grandeur of stature, and elegance of symmetry, to gracefulness of motion, and is, above all, estimable for his peculiar and diversified utility. When ranging wild, and without control, he is not ferocious; and in his domestic state he is generous and docile, and although spirited, yet obedient to rule. Equally adapted to the purposes of business and pleasure, he affords us

the most essential services, and contributes to our most healthful amusements. Horses are now bred in almost all countries ; but there are few in which this noble animal is seen in possession of his native freedom, unsubdued by man : it is only in the vast and uncultivated plains of Africa and Arabia, and in some parts of South America, that he is to be found in a state of native independency. In those wild and extensive tracts, wild horses may be seen in droves of five or six hundred, feeding together, while one of the number is always observed to be posted at the outside, and acting the part of a sentinel, in order to give notice of any approaching danger. When any such seems to threaten, he gives the alarm by a loud snort, and the whole herd fly off with amazing rapidity. The wild horses of Arabia are esteemed the most beautiful of the whole species. They are generally of a brown colour, with a black mane and tail of short tufted hair. In size and bone they are, for the most part, inferior to the tame breed, but exceedingly active and swift. The common method of taking them is by snare and pitfalls, formed in the ground. The wild horses, now so numerous in some parts of America, especially in Paraguay, Patagonia, and La Plata, were originally of the Spanish breed, and were carried thither, and turned into woods, by the first Spanish settlers. The astonishment which the Mexicans, the most polished and intelligent of all the Americans, manifested at the sight of horses, convinced the Spaniards that this animal was totally unknown on that continent, and induced them to carry numbers thither, not only for their immediate use, but also to propagate a breed. Since that time, they have multiplied so much as to range in numerous herds through those extensive countries. They are difficult to take, but if once taken are easily tamed, and soon learn to know their master ; and if they be by any means set at liberty, they are easily caught again, not shewing any inclination to return to their former state of wildness, a circumstance which evinces a remark-

able tractableness of disposition in this noble and useful animal.

The Horse, my dear Sir, is so well known to you, as well as to every one else in this country, that it would be entirely needless to trouble you with a particular description of his shape and exterior appearance. It will be sufficient for your information, to exhibit to your view the principal distinctions which nature has made in the different breeds of this noble quadruped, through the influence of climate and other accidental circumstances. For this purpose, I shall first call your attention to

THE ARABIAN HORSE.

Of all the people in the world, the Arabians set the greatest value on horses ; and almost every Arabian, how poor soever he may be in other respects, possesses at least one horse. They are particularly fond of mares for riding, as they find them to bear hunger and thirst better than horses, besides being less vicious. The Turks, on the contrary, esteeming horses the most, purchase those which are not kept for stallions. The Arabians are exceedingly careful of the breed of their horses, which, instead of crossing, as is generally practised in other countries, they take particular care to preserve pure and unmixed. They know their generations, with all their alliances and ramifications, and preserve for an amazing length of time, the genealogies of their horses, with as much care as the nobility of other countries do those of their families. The lowest price for a mare, of the first class, is from one hundred to two or three hundred pounds sterling. It is, therefore, no wonder, that they should be sold for exceeding high prices, when carried into foreign and far distant countries.

Horses form the principal riches of many of the Arab tribes, who use them both in the chace, and in their plundering expeditions. They never beat them, but always treat them with the utmost kindness. The Arab, his wife, and children, lie in the same apartment with the mare and foal, who, instead of injuring, suffer the children to rest on their bodies and





and necks, and even seem afraid to move lest they should hurt them.

The fondness and tender attachment, which the Arabs have for their horses, is well illustrated by the following anecdote, related by the Chevalier D'Arvieux in his travels in the Desert of Arabia, and also in St. Pierre's *Studies of Nature* : "The whole stock of a poor Arabian consisted of a beautiful mare, which the French consul, at Saïd, offered to purchase, with intention to send her to Louis XIV. The Arab, pressed by want, hesitated a long time, but at length consented, on condition of receiving a very considerable sum of money, which he named. The consul wrote to France for permission to close the bargain, and having obtained it, sent immediately to the Arab the information. The man, so poor as to possess only a miserable rag, a covering for his body, arrived with his magnificent courser. He dismounted, and looking first at the gold, and then stedfastly at his mare, heaved a deep sigh :---'To whom is it, (he exclaimed) that I am going to yield thee up ? To Europeans ! who will tie thee close ; who will beat thee ; who will render thee miserable !---Return with me, my beauty, my jewel ! and rejoice the hearts of my children !' As he pronounced the last words, he sprang upon her back, and was out of sight almost in a moment."

Arabia seems to have been the parent country of horses, whence they have probably spread into Barbary, and other parts of Africa, which produced a breed that is considered next to the Arabian in swiftness and beauty, although somewhat inferior in size. From the last mentioned countries they have probably made their way into every part of the old continent.

The Spanish horses are also held in high estimation ; and they are small but beautiful, extremely swift, and full of spirit. Those of India and China are extremely small and vicious. One of these brought into this country, as a present to Her Ma-

jesty, was little larger than a large mastiff, measuring, only nine hands.

Of all the nations of Europe, the English have, during a long time, paid the greatest attention to the improvement of their horses, by the introduction of the most valuable mares and stallions of different kinds, and by a judicious mixture of different breeds. That which is held in the highest estimation is

THE RACE HORSE.

The breed of English race horses is superior to that of any other country in Europe, or, perhaps, in the world. - For a long course they excel those of every other part of the globe, and none can surpass them in swiftness.---The celebrated Childers, the property of His Grace the Duke of Devonshire, was universally allowed to be the fleetest horse ever bred in the world. He ran repeatedly at Newmarket against the best racers of his time, and was never beaten. He passed over eighty-two feet and half in a second of time, and has run round the course at Newmarket, which is very nearly four miles, in six minutes and forty seconds, an instance of speed never exhibited by any other quadruped of any species whatever.

THE HUNTER

Is that which particularly shews the successful attention of the English, in the judicious management of their horses, by which they have skilfully combined the swiftness of one race with the strength of others. By this judicious method they have produced the English hunter ; and this breed is indisputably the most useful of any in the world. Their spirit, agility, and perseverance, are qualities which render them extremely valuable, whether for the chace or for travelling ; and most of the posting on the great roads, is now carried on by this active and useful race.

Though nature appears to have implanted a benevolent disposition in the horse towards man, yet, that he is not unconscious of injuries, nor devoid of resolution to revenge them, is exemplified in the following incident :

A baronet, one of whose hunters had never tired in the longest chace, once encouraged the cruel thought of attempting, completely, to fatigue him. After a long chace, therefore, he dined, and again mounting, rode him furiously among the hills. When brought to the stable, his strength appeared exhausted, and he was scarcely able to walk. The groom, possessed of more feeling than his brutal master, could not refrain from tears at the sight of so noble an animal thus sunk down. The baronet, sometime after, entered the stable, and the horse made a furious spring upon him, and, had not the groom interfered, would soon have put it out of his power ever again to misuse his animals.

Hunters are sent over from England to almost every part of the continent, particularly to Russia and Germany. They are sold there for very high prices, as their superiority over all other horses is universally known and acknowledged.

While the beauty, the elegance, the activity, and strength, of the race-horse and the hunter, combined with the most wonderful tractableness of disposition, willingness of exertion, and submissive obedience, are excellencies which give to these noble quadrupeds a decided pre-eminence in the animal creation, it must be a subject of regret to the feeling mind, that those valuable qualities should be so frequently abused, and such extraordinary power exhausted in the most useless exertions.

THE BLACK DRAUGHT HORSE.

This breed of horses surpasses in strength all others that any country has produced. The largest of this sort are found in the fens of Lincolnshire. Instances have been known, of a single horse of this breed drawing, for a short distance, the weight of three tons. A great part of the British cavalry are mounted on horses of this kind : in some regiments, those of a lighter make are used. The old black coach-horse is now almost universally set aside ; instead of which a more active and lighter kind is used in our carriages. It is pleasing to observe, that the

pretension to mend Nature's work by docking the tail, a practice offensive to humanity, and replete with absurdity, begins now to be unfashionable, while we must still regret the continuance of the custom of forming it by nicking, which is equally cruel and useless, as it gives to the horse no real, but only a fancied ornament.

The ponies of Wales, and those bred in the highlands of Scotland, seem to be an original and unmixed race. Both kinds are much esteemed for the neatness of their shapes, and the agility of their motion, but still more for their vigor in supporting fatigue, as well as for being exceedingly sure-footed in difficult roads; qualities well adapted to the mountainous tracts of which they are natives.

It is very probable, that the horse was not originally a native of this island; but at what time, or from what part of the continent this noble quadruped was first introduced, history does not inform us. We learn, however, from the commentaries of Julius Cæsar, that horses were plentiful in this country at the time of his invasion; and although that celebrated commander has not given us any description of their kind and shape, his narrative affords a sufficient proof of their activity and discipline, when used in the war-chariots of the Britons.

We cannot, my dear Sir, dismiss this article, without making some reflections on the wisdom and goodness of Divine Providence, in creating an animal of such singular utility to the human species. If we rightly consider the difficulties of our situation, if the goodness of Providence had not provided us the assistance of the horse, we shall find that the obstacles we should in many cases have met with would have been almost insurmountable. The want of horses was one of the principal causes which rendered the natives of the new world so much inferior of the European invaders; and the decided superiority of the Spaniards over the Mexicans was owing almost, as much to their horses as to their fire-arms. Indeed, the want of horses would always have operated

as a check to the advancement of the American nations, in the process of civilization, and have always kept them, with respect to the arts, both of war and peace, in a state of inferiority to the Europeans. Next to the want of iron, the want of horses is, perhaps, one of the greatest physical obstacles to the advancement of the arts of civilized life. We ought, therefore, to regard the horse as an inestimable gift of the bountiful Creator, and treat him, not with neglect, nor with cruelty, but with attention and kindness, not only while he is able to perform our work, or be conducive to our pleasures, but even after age or accident may have disqualified him for further service. The exercise of wanton cruelty upon any of God's creatures is an act of impiety towards their Creator; but the ill-treatment of such as are given us for the purpose of promoting our conveniency and comforts, bears the additional stamp of foul ingratitude to the All-bountiful Donor.

Your good sense and benevolent feelings, although not yet matured by age and experience, will, I am certain, point out to you the propriety of these reflections; and in this pleasing confidence I beg leave to assure you, that, with unfeigned affection,

I am, dear Sir,

Your's, &c.

LETTER XIII.

"Who hath sent out the wild ass free, or who hath loosed the bands of the wild ass? Whose house I have made the wilderness, and the barren land his dwellings. He scorneth the multitude of the city, neither regardeth he the crying of the driver. The range of the mountains in his pasture, and he searcheth after every green thing." JOB, chap. xxxix.

DEAR SIR,

I NOW take upon myself to call your attention to an animal of a somewhat plainer form, and less distinguished rank in the order of quadrupeds, and of much less value in the estimation of mankind than the horse, although, in many respects, but little in-

ferior in utility. The ass was, according to the most probable conjecture, as well as the horse, originally a native of Arabia and the adjacent countries; and the supposition is not a little corroborated by the congeniality of a warm climate to its constitution.

Asses were not, any more than horses, originally found in America, although the climate, in some parts of that continent, is as congenial to their nature as that of Asia or Africa. Those which the Spaniards carried thither from Europe have greatly multiplied, and, in some parts, run wild, and are taken in snares, like the wild horses. The manner of hunting the wild asses, in Quito, is this: A number of Spaniards, or Creoles, on horseback, attended by Indians on foot, form a large circle, in order to drive them into a narrow compass. Then, riding at full speed, they throw a noose over them, and having secured them with cords, leave them until the chase be over, which sometimes lasts three or four days. These asses have all the swiftness of horses, and neither declivities nor precipices will stop their flight. When attacked, they defend themselves by kicking and biting, without ever slackening their pace. From this description of the ass-chace, given by a celebrated Spanish writer, it seems that hunting the wild horses and asses, in South America, must afford better pastime to a sportsman, than hunting the hare or the fox in Europe.

It is very remarkable, that the wild asses, when taken, after carrying their first load, lose their dangerous ferocity, and soon contract the stupid look and dulness which we observe in the rest of the species. It is also observable, that they will not suffer a horse to live among them. If a horse happens to stray into a place where a herd of them is grazing, they all fall upon him, and bite and kick him to death.

Even in the tame state, the ass will occasionally manifest great courage, and even fierceness. Mr. Pennant tells us, that he was witness at *Les combats des animaux*, the theatre, or bear-garden of Paris, to an extraordinary instance of spirit and prowess in a

tame ass, in a fight with a dog. The latter could never seize on the long-eared beast, which sometimes caught the dog in his mouth, and sometimes threw him under his knees, and kneeled on him, until the dog at length fairly gave up the contest.

But the asses of Egypt and Arabia excel even those of Spain, in the gracefulness of their movements, and the nobleness of their carriage. Their foot is sure, their step light, and their paces quick, brisk, and easy. They are used for riding by the most opulent of the inhabitants, and even ladies of the highest rank.

When the rider alights, he has no occasion to fasten his ass ; he merely pulls the rein of the bridle tight, and passes it over a ring on the fore-part of the saddle : this confines the animal's head, and is sufficient to make him remain patiently in his place.

Of an animal so well known as the ass a particular description is unnecessary. Every one is acquainted with his unparalleled patience, perseverance, and gentleness. He is more sluggish and untractable, but stronger in proportion to his size, than the horse, and liable to fewer diseases ; and of all the different kinds of quadrupeds, the least infested with lice, or any other vermin.---The ass is kept at a very moderate expence, and contents himself with the coarsest herbage ; but is particularly fond of plantain. He is, however, extremely nice in the choice of his water, and will drink only at the clearest stream. He is much afraid of wetting his feet, and will, even when loaded, turn aside to avoid the dirty parts of the road. He sleeps less than the horse, and never lies down for that purpose, except when extremely fatigued. He is three or four years in coming to perfection, and lives to the age of twenty or twenty-five years. The she-ass goes eleven months with young. The skin of the ass is valuable, and is converted to different purposes ; as to cover drums, and sometimes to make shoes, as also a thick kind of parchment, useful for pocket-books. Of the ass's-skin the Orientals make the sagri, which we call shagreen.

From this view, my dear Sir, you will probably conceive a higher opinion of the utility and importance of the ass, than you have hitherto been accustomed to form. You will readily perceive, that if he be too often degraded into the most neglected of domestic animals, it is not for any deficiency in useful and valuable qualifications, but merely through the caprice of those who are not able to appreciate his worth. The ass was held in high estimation by the Israelites; and the forty sons of Abdon, judge, or chief magistrate of Israel, riding on asses, is mentioned in the scripture as a mark of high distinction, and a display of superior grandeur. These ancients seem to have known this noble, although unjustly degraded, quadruped better than we do at the present day. Their judgment was, in this respect, better, and their taste certainly more refined, than that of those barbarians among us, who beat, abuse, and treat him with all manner of ill-usage, merely because he is an ass, without considering how much we should esteem his excellent and useful qualifications, and how glad we should be of his services, if the Creator, in the exuberance of his bounty, had not given us the horse. I flatter myself, that these considerations will excite in your mind a sentiment of compassion and benevolence towards this inoffensive and useful animal.

I shall also, here, say something of a quadruped which, although pretty well known, is not very common in Great Britain, nor, indeed, of so great use here, as in some other countries; I mean the Mule, an exceedingly hardy and useful animal, but which is not a distinct species, being the offspring of the horse and the ass. This quadruped is remarkably healthy, and lives about thirty years. In Spain, persons of the first quality are frequently drawn by mules, which are held in such estimation, that fifty or sixty pounds is a common price for one of the best.--- This is not surprising, when their utility in mountainous countries is well considered; for they are, beyond comparison, more sure-footed than horses, and a person may travel with them in perfect security in

THE MULE.

roads, where, to venture on horseback, would bring inevitable destruction. Their manner of descending the precipices of the Alps, and the mountains of Spanish America, is extremely singular. In these difficult and dangerous passages, the road frequently lies between perpendicular or over-hanging rocks on one side, and frightful precipices on the other, from which, to look down into the immense abyss below, is sufficient to strike the traveller with terror and stupefaction ; and the narrow path, winding along the side of the mountains, is in many places interrupted with steep declivities of several hundred yards. These, no horses whatever, can descend ; mules are the only beasts of burthen that are equal to the task. When they arrive at the brink of one of those almost perpendicular descents, they stop short without any check from the rein, and continue sometime immovable, seeming to ruminate on the danger before them, trembling, snorting, and attentively viewing the road. Having thus prepared themselves for the descent, they place their fore-feet in a posture adapted to prevent a too great precipitancy, and put their hind-feet together, drawing them a little forward. In this attitude they slide down with great swiftness and wonderful steadiness, like an experienced skaiter balancing himself upon the ice. But in this dangerous moment, the rider must do nothing but endeavour to keep his seat firm on the saddle, and trust his safety entirely to the mule ; for the least check of the rein, or the least motion, would be sufficient to disorder the equilibrium, in which case both must unavoidably be dashed to pieces. Some mules, after having been much accustomed to those dangerous journies, acquire a kind of reputation for their safety and dexterity, which very much enhances their value.

As there is only another animal of the horse kind, I shall entertain you with a short description of it, before I conclude my letter. The animals of this tribe are, by naturalists, reckoned only three in number, the mule being not a distinct species, but an heterogeneous production. Of these three, the horse is the

most stately and spirited, the ass the most patient, and the zebra the most beautiful, although the wildest quadruped that nature has produced.

THE ZEBRA,

In shape, has a resemblance to the mule ; for it is less than the horse, and larger than the ass ; but it is chiefly prized for the exquisite beauty of its skin, the smoothness of which nothing can surpass. Nor can any thing exceed the beautiful regularity of its colours, which in the male are white and brown, and in the female white and black, ranged in alternate stripes over the whole body, in a stile so beautiful and ornamental, that it might, at the first sight, seem the effect of the most exquisite art, rather than the genuine production of nature. The head is adorned with beautiful and regular stripes, which converge into a central point in the forehead ; the neck is ornamented in the same manner, with fine rings which surround it : the thighs, legs, and even the very tail, is beautified in the same stile of elegance ; and every part is equally decorated. What is particularly remarkable in the colouring of the zebra is, that the stripes, which constitute its peculiar ornament, are disposed with such exactness of distance, that the most consummate artist could not draw lines with more perfect regularity. It seems as if, in the adorning of this extraordinary animal, the Creator had given the command to Nature, to display her utmost skill, and in the formation of its stripes, to bid defiance to the line and compass.

Such is the beauty of the zebra ; but it has hitherto been esteemed absolutely untamable. It must, however, be confessed, that no effectual method has yet been adopted for that purpose. Resembling the horse in its form, as well as its manner of living, it might seem, that it possesses a similitude of nature ; and some naturalists suppose, that with proper management it might be converted to the same uses. This opinion, however, is but ill supported by experience ; for those that have been brought to this country, have discovered a degree of viciousness, that has rendered it unsafe to approach them. The zebra, which was





long kept in the royal menagerie, in France, was exceedingly wild at its arrival, and was never completely tamed. He was, indeed, broken for the saddle, but his untractableness rendered great precaution necessary; and two men were obliged to hold the bridle while another was riding him. Some suppose, that if this animal were completely domesticated, and a tame breed produced, it might then be brought under the same management as the horse. A beautiful male zebra, at Exeter-change, London, which was afterwards burnt to death, by the mischievous act of a monkey setting fire to the straw on which he lay, appeared to have entirely lost his native wildness, and was so gentle as to suffer a child of six years old to sit quietly on his back, without exhibiting the least sign of displeasure. He was familiar even with strangers, and received those kind of caresses, that are usually given to the horse, with evident satisfaction. The one, however, that was some years ago, kept at Kew, seemed of a savage and fierce nature. No one dared venture to approach it except the person who was accustomed to feed it. For, whatever speculation may imagine, experience shews this animal to be of a very different disposition from both the wild horse and the wild ass. Both these, when once taken, are easily tamed, and become tractable, which has never yet been the case with the zebra.

This animal has, by many naturalists, been erroneously confounded with the wild ass. There exists, indeed, an elegant breed of wild asses in some parts of the Levant, and in the northern countries of Africa, which is much more beautiful than the common ass, and which, like the finest breed of horses, originated from Arabia. But the zebra is a very different animal from these, and inhabits a different climate. It exists neither in Europe, Asia, nor America, nor even in the northern parts of Africa, and is only found in the southern regions of the last-mentioned quarter of the globe, from Abyssinia to the Cape of Good Hope, and from Mosambique to Congo.

As the ancients were unacquainted with that part of world, it is evident that the zebra cannot be the species of wild ass, which they well knew by the name of the Onagrus. The Dutch, of the Cape colony, have employed every means to subdue and tame the zebra without success. Whole herds of these animals are sometimes seen feeding; but they are exceedingly difficult to take, on account of their vigilance and extraordinary swiftness. I have been somewhat prolix in the description of this singularly beautiful quadruped, as it constitutes a striking object in the animal creation, and is esteemed a present fit to be made to the greatest prince. It seems, that the Almighty Being has been willing to display to our eyes the exuberance of his power, in bestowing so great a profusion of beauty on the animal inhabitants of the desert, as well as so remarkable an adaptation of qualities on those more particularly designed for the service of man. I am, dear Sir,

Your's, &c.

LETTER XIV.

“ The strong, laborious Ox, of honest front.”

THOMSON.

DEAR SIR,

THE subject of my present letter is, perhaps, the most interesting that is furnished by the whole system of animated nature. A very little reflection will suffice to convince you, that those animals, commonly called ruminating, of which the ox, sheep, and goat kind, are the principal, constitute, so far as considered in relation to man, the most important and intrinsically valuable part of the brute creation. If, indeed, indispensable necessity alone were made the criterion of utility and value, the ox and the sheep would claim a superiority even over that noble animal, the horse; for the former, nourishing us with their milk, sustaining us with their flesh, and clothing us with their fleeces, are objects of the utmost importance to





us, and absolutely necessary to our well-being, if not to our existence ; while the latter, notwithstanding his extensive and universally acknowledged utility, might be left out of the system of animal creation with less detriment to the human species, than would ensue from the omission, or extinction of the ox and the sheep. Ought we not, then, my dear Sir, to admire and adore the infinite goodness of Him, who, by creating for our use both the one and the other, has so kindly considered our wants, and provided for their supply ; and consulted not only our necessities, but also our convenience ?

The various animals, which ruminates or chews the cud, living wholly on vegetables, have no inducement to make war on any other species ; and being confined to grain and herbage for their nourishment, their stomachs and intestines have received from nature a conformation which enables them to receive a large quantity of food : for this purpose they are furnished with four stomachs. The food, after mastication, descends into the first of these, and after remaining there some time, is forced up again into the mouth, where it undergoes a second chewing. After this, it passes into the second stomach, and thence descends through the various convolutions of the intestines. Here again, my dear Sir, we must admire the wisdom of the Creator, in thus giving to these animals an interior conformation which enables them to receive large quantities of aliment, and to retain it in the stomach a length of time, sufficient for the extraction of such a quantity of nutritious matter as is necessary for their support.

Of the different animals of this class, I shall, in the first place, call your attention to

THE OX KIND.

Among the various quadrupeds with which the earth abounds, as none is more necessary to the existence of the human species than the Cow, so, likewise, none appears to be more extensively propagated ; for it is found to exist from the polar circles to the equator, although it appears liable to greater

changes from the difference of pasture and climate than most other animals; and in no other can there be found a greater variety of kinds, arising from the diversity of these circumstances. In every part of the world the cow is found large or small, in proportion to the quantity and quality of its food. Our English pastures seem admirably suited to the nature of this quadruped; and there is no part of Europe where it grows to a larger size, affords a greater quantity of milk, or fattens in less time. The age of the cow is discoverable by its horns. At the age of four years, a ring is formed towards the root, and every succeeding year adds another. Thus its age may be exactly known, until it grows very old, when the rings grow closer together, and appear less distinct.

In Scotland there are two sorts of cows different from each other, and from those of the southern parts of the island. Those of the county of Galloway are without horns, and generally of a brown colour, but often mixed with black, and sometimes entirely black. Large droves of these are brought into the southern parts of the kingdom, where they soon fatten.

The cattle of the Highlands are very small, and mostly black, with fine white sharp horns, and hair thick like fur. Large droves of these are likewise brought into England. They are generally esteemed for the excellence of their beef, as well as for the facility with which they fatten.

In Lord Tankerville's park, at Chillingham, near Berwick-upon-Tweed, there is yet left a breed of wild cattle, probably the only remains of the true breed of that species, at present to be found in this kingdom. Their colour is invariably white, with the muzzle black, and the whole inside of the ear, and about one-third of the outside, from the tip downwards, red. Their horns are white, with black tips, and bent downwards.

At the first appearance of any person near them, they set off in full gallop, and at the distance of two or three hundred yards, wheel round, and come boldly

up again, tossing their heads in a menacing manner. On a sudden they make a full stop, at the distance of forty or fifty yards, and look wildly at the object of their surprize ; but on the least motion, they all gallop off again with equal speed, but not to the same distance, forming a smaller circle ; and again returning, with a bolder and more threatening aspect than before, they approach much nearer, probably within thirty yards, when they make another stand, and again gallop off. This they do several times, shortning their distance, till they come within a few yards, when it is generally thought prudent to leave them, as, if they were further provoked, they would probably in a few turns more make an attack.

It was formerly a practice, occasionally to hunt a bull from among this herd ; of which notice being given, the inhabitants of the neighbourhood assembled, sometimes to the number of a hundred horsemen, and four or five hundred foot, all armed with guns or other weapons. But from the number of accidents which happened, this dangerous mode has been little practised of late years, the park-keeper alone generally killing them with a rifle-gun at one shot.

When the cows of this herd calve, they hide their young in some sequestered place, and go to suckle them two or three times a day. The calves, if any person comes near them, clap their heads close to the ground, and lie like a hare in form. This seems a proof of the wildness of their nature ; of which, the following instance is likewise given : Dr. Fuller, author of the History of Berwick, found a calf hidden by its mother only two days old, very lean and weak. On his stroking its head, it got up, pawed two or three times like an old bull, bellowed very loud, went back a few steps, and bolted at his legs with all its force : it then began to paw again, bellowed, stepped back, and bolted as before. But being aware of its intentions, he moved aside, it missed its aim, fell, and was so very weak, that, though it made several efforts, it was not able to rise. It, however, had done

enough, the whole herd was alarmed, and coming to its rescue, obliged him to retire.

The size of horned cattle, in general, as well as the quantity of milk, butter, and cheese, they produce, depend in a very great degree on the nature of their pasturage. In barren countries, they are always of an inferior bulk, and the largest breed will there soon degenerate, and become small. The differences arising from this circumstance are exemplified in many parts, even of this narrow island; and, throughout the world, are confirmed by universal observation. In the country of the Elut Tartars, where the pastures are remarkably luxuriant, the horned cattle are said to grow to so large a size, that a man must be tall that can reach the top of their shoulders.

The quantity of milk and butter, afforded by the cow is increased or diminished by a variety of circumstances, although it be affected by none more than the difference of its pasture. Some cows give only six, while others yield ten, fifteen, or even twenty quarts of milk in one day; some are even said to have afforded thirty quarts. From the milk of some cows, twelve or fourteen pounds of butter have been produced in one week. The quantity, however, as well as the quality of these productions of the cow, depend very much on the greater or less advancement of the period of gestation, which is nine months. The life of the cow extends to about fifteen years.

Formerly the ox was, of all quadrupeds, accounted the most proper for the draught or the plough. Before our highways were so well repaired, and so many turnpike-roads made in every part of the country, he was certainly better adapted to the draught than the horse; but in the present state of the roads, the case is altered, and horses are found much more expeditious. The use of oxen for the plough is also nearly laid aside. This change arises from a similar reason; the superior speed of horses, which the advanced price of labour renders at this day an object of considerable importance. In the reign of Queen Elizabeth horses were so scarce, that no more than two thousand could

be procured to mount the cavalry of this kingdom. At the present time, the numerous vehicles of all kinds seen on the roads and in the streets, display such a multitude of horses, as must appear astonishing. Ancient Rome, when mistress of the world, and the centre of luxury beyond all example, did not, perhaps, contain so many horses as might now be found either in Paris or London, although there is reason to believe, that the imperial city was once equal to both of them together, in respect of population, and perhaps also of wealth; and it is almost beyond a doubt, that England now contains a far greater number than could, during many ages, be found in all Europe. How far the prodigious increase of the number of these truly useful and noble animals is eligible in a political view, it is difficult to determine. In those cases, the complexity of circumstances is so great as to require extensive information, as well as accurate calculation, before the truth can be ascertained, and the balance justly estimated. It is, however, evident, that the multiplication of horses has a certain tendency to the diminution of population, by lessening the quantity, and enhancing the price of the provisions necessary for the support of the human species.

To form a just idea of the various and extensive utility of the ox, you ought, my dear Sir, to consider, that there is scarcely any part of him without its use. The skin is manufactured into leather; the hair mixed with lime, is used in plaistering; the bones serve as a substitute for ivory, and being calcined, are used by the refiners as an absorbent, to carry off the baser metals in refining silver, and when ground in a mill, they become the most excellent manure for fertilising the ground. Boxes, combs, knife-handles, drinking-vessels, and various other articles, are made of the horns, which, when softened in boiling water, become so pliable, as to be formed into lanterns, an invention ascribed to King Alfred: we are furnished with candles from the tallow, and the feet afford an excellent oil, adapted to a variety of purposes. Glue

is made of the cartilages, gristles, and the finest pieces of the cuttings and parings of the hides, boiled in water. The thinnest of the calves'-skins are manufactured into vellum. The blood is the principal ingredient in making Prussian-blue. Sadlers, and others, use a fine sort of thread prepared from the sinews, which is much stronger than any other equally fine. The gall, liver, and urine, are not without their uses in medicine, or in manufactures.

The universally known productions of milk, butter, and cheese, as well as the excellent nutriment which beef affords to the human body, clearly shews that the cow is, of all quadrupeds, and indeed of the whole animal creation, the most beneficial to man. The observation of Dr. Goldsmith, that "The cow is the poor man's pride, his riches, and support," is pleasing, but unfortunately inaccurate. That agreeable and elegant writer had not been accustomed to see and observe much rural economy. The monopoly of land deprives the greatest part of the poor of the means of keeping a cow; and in most country villages milk cannot be procured at any price.

I shall, in my next, entertain you with an account of some other species of horned cattle, which, not being domesticated like the cow, are not so useful to man, although it is not improbable, that, by a proper management more benefit might be derived from them than is generally imagined.

In the mean while, most affectionately,

I am, dear Sir,

Your's, &c

LETTER XV.

"The buffalo and bison, wild and fierce,
Roams the wide plains, exulting in their strength."

DEAR SIR,

ACCORDING to my promise, which you justly expect me to fulfil, I shall give you a concise description of the

URUS, OR WILD BULL.

An animal which greatly resembles the tame kind, except in some trifling differences, which it probably owes to its natural wildness, in conjunction with the luxuriance of the pastures in which it ranges. It is chiefly to be met with in the extensive plains and forests of Lithuania, where it grows to an amazing size and bulk, being in these respects superior to every other quadruped except the elephant. It is entirely black, except a single stripe of white that runs along the whole length of the back : its eyes are red and fiery ; the horns thick and short ; the forehead is ornamented with a bushy covering of thick curled hair : the neck is short and strong, and the skin exhales an odour somewhat resembling musk. The female, although much less than the male, exceeds in size the largest bulls produced in this country.

THE BISON.

Is another animal which differs from the rest of the ox kind, principally in having a large hump between its shoulders, resembling the boss of the camel, only with this difference, that it is placed more forward. The bison is furnished with a long shaggy mane, which forms a beard under his chin. His head is small, and his forehead wide ; his eyes fierce and red, and his horns extremely expanded. He is exceedingly wild and fierce, and the pursuit of him is very dangerous, except in forests where the trees are large enough to conceal and secure the hunters. The general method of taking this animal is by digging deep pits, covered over with grass, on the opposite side of which some of the hunters placing themselves, tempt the enraged creature to pursue them, when, falling into the snare, he is soon overpowered.

THE BUFFALO

Is another species of horned animal, which, by its appearance, seems to be of the cow kind, and in its form bears the most striking general resemblance to the common ox. Its habits and propensities are also similar, with respect to its aptitude for domestic uses,

as both are equally submissive to the yoke, yet no two species of animals can be in reality more distinct; and they have the most singular antipathy against each other, which appears the more extraordinary, as nothing of the kind is observable between the common cow and the bison, although they resemble each other much less in form.

The buffalo is not so beautiful an animal as our common ox, his figure being more clumsy, his body thicker and shorter, and his legs, in proportion, longer; his head, which he carries nearer the ground, is smaller than that of the cow; his horns are not so round, nor is his body so thickly covered with hair. The flesh of the buffalo is described by some as hard and unpalatable, and exhaling a disagreeable smell. Sparman, on the contrary, says, that the flesh is coarse, and rather lean, but full of juice, of a high but not unpleasant flavour. In regard to this, much may depend on the caprice of taste as well as on the difference of the climate and feeding; for experience proves, that these circumstances have a very powerful influence on all animals, especially those of the horned kind, both with respect to their size and shape, the nature of their flesh, and the quality of their other productions. The innumerable shades of difference, produced in the same species of animals by the influence of soil and climate, and other adventitious circumstances, are every where observable, and admit of an endless variety: it is, therefore, no wonder, that naturalists, as well as travellers, should differ in the description of minute particulars.

A very singular circumstance, relative to these animals, is recorded by those who completed the last voyage of Captain Cook to the Pacific Ocean. When at Pulo Condore, they procured eight buffaloes, which were to be conducted to the ships by ropes, put through their nostrils, and round their horns. But when these were brought within sight of the ship's people, they became so furious, that some of them tore out the cartilage of their nostrils, and set themselves at liberty; and others broke down even the shrubs to which it was frequently found necessary to

fasten them. All attempts to get them on board would have proved fruitless, had it not been for some children whom the animals would suffer to approach them, and by whose puerile management their rage was quickly appeased : and when the animals were brought to the beach, it was by their assistance, in twisting ropes about their legs, that the men were enabled to throw them down, and by that means get them into the boats. And what appears to have been no less singular than this circumstance, was, that they had not been a day on board before they became perfectly gentle.

The wild buffalo is found in India, and in many parts of Africa, especially towards the Cape of Good Hope. These are a formidable tribe, and it is impossible to escape their fury, otherwise than by climbing into some large tree, as they will break down one of a moderate growth. Many travellers have been instantly gored to death, and trampled to pieces under their feet. They run with amazing speed, and cross the largest rivers without difficulty. Professor Thunberg tells us, that when travelling in Caffraria, he and his companions had just entered a wood, when they discovered a large old male buffalo, lying alone, in a spot that, for the space of a few square yards, was free from bushes. The animal no sooner observed the guide, who went first, than with a horrible roar he rushed upon him. The man, turning his horse short round, behind a large tree, the buffalo rushed straight forwards to the next man, and gored his horse so dreadfully in the belly, that he died soon after.---The two men climbed up into trees, and the furious animal made his way towards the rest, of whom the professor was one, who were approaching, but at some distance. A horse, without a rider, was in the front : as soon as the buffalo saw him, he became more outrageous than before, and attacked him with such fury, that he not only drove his horns into the horse's breast, but even out again through the very saddle. This horse was thrown to the ground with such violence, that he died instantly.

many of his bones broken. Just at this moment the Professor happened to come up; but, from the narrowness of his path, having no room to turn round, he was glad to abandon his horse, and take refuge in a tree. The buffalo, however had finished; for after the destruction of the second horse, he turned suddenly round, and galloped away.

Some time after this, the professor and his party perceived an extremely large herd of buffaloes grazing in a plain. As they were now well acquainted with the disposition of these animals, and knew that they would not attack any person in the open plains, they approached within forty paces, and fired amongst them. The whole troop, notwithstanding the individual fierceness and boldness of the animals, surprised by the sudden flash and report, turned about and made off towards the woods. The wounded buffaloes, being unable to keep pace with the rest of the herd, were separated from them. Amongst these was an old bull buffalo, which ran with fury towards the party. They knew that, from the situation of the eyes of these animals, they could see in scarcely any other direction than straight forward; and that, in an open plain, if a man that was pursued, darted out of the course and threw himself flat on the ground, they would gallop forward to a considerable distance before they missed him. These circumstances prevented their suffering any material alarm. The animal, from this contrivance, passed close by them, and fell before he appeared to have discovered his error. Such, however, was his strength, that, notwithstanding the ball had entered his chest, and penetrated through the greatest part of his body, he ran at full speed several hundred paces before he fell.

The hunters kill the buffaloes by firing on them from the tops of trees, with balls partly composed of tin, as the hide of this animal is too hard to be penetrated by a common musket ball. The hide of the buffalo is very valuable, and the leather made from it is much esteemed for its smoothness, impenetrability, and duration, qualities which render it excellent for harness.

This animal, although so wild and formidable in a state of nature, is very easily tamed : it is patient and persevering, and being endowed with great strength, is very serviceable for the draught. In Italy the buffalo is domesticated, and constitutes a considerable part of the wealth and the food of the lowest sort of the peasantry, who use them for the purposes of agriculture, and make butter and cheese from their milk, which is, however, reckoned inferior to that of the cow. Buffaloes are also found in a tame state in many parts of the East, as well as in Italy. It is observed by D'Obsonville, that it is a singular sight to see large herds of them, morning and evening, cross the Tigris and Euphrates. They proceed, all wedged together, the herdsman riding on one of them, sometimes standing upright, and sometimes couching down, and if any of those on the outside straggle, or lag behind, stepping lightly from back to back, to drive them along. Thus you see, my dear Sir, that the buffalo, although naturally fierce and terrible when wild, is by the management of man rendered an useful animal, and a valuable gift of the bountiful Creator,

I am, dear Sir,

Your's, &c.

LETTER XVI.

" Behold, where bound, and of its robe bereft
By needy man, that all-depending lord,
How meek, how patient, the mild creature lies.

* * * * *

A simple scene, yet hence Britannia sees
Her solid grandeur rise, hence she commands
Th' exalted stores of every brighter clime!"

THOMSON.

DEAR SIR,

PERMIT me at present to call your attention to a species of the animal creation, which in respect of utility may be deservedly ranked with the horse and the ox, and, indeed, is scarcely less conducive to the well-being of the human race than those two most

valuable quadrupeds. In some respects, indeed, this inestimable creature may be said to excel both. If the horse be conducive to our pleasure and convenience, and to the easy and expeditious performance of the greatest part of our business ; if the cow furnish us with the most nutritive and strengthening part of our food, it is to the sheep that we owe not only a very considerable portion of our aliment, but also the most essential part of our clothing.

The sheep is, in a peculiar manner, the creature of man ; to him it entirely owes its protection, and to his necessities it amply contributes. On man, indeed, its existence depends ; for without his fostering care, and the interest he has in its preservation, its numerous enemies would soon exterminate the whole race. Though singularly inoffensive, it does not, however, appear so stupid and inanimate as it is considered to be by Buffon, who describes it as "destitute of every art of self-preservation." On mountains, and in extensive sheep-walks, where numerous flocks browse together, the sheep assumes a different character, and a ram, or even sometimes a wedder, or an ewe, has been seen to attack a dog, and to come off victorious. Sometimes, in case of attack, they will have recourse to the collective strength of the whole flock, and drawing up into a compact body, and keeping close together, present towards every quarter a formidable front, which cannot be attacked without danger to the assailant. The sheep undoubtedly discovers less animation and sagacity than many other quadrupeds ; but in the selection of its food, few display a greater share of instinctive discrimination. Its acuteness of perception, in regard to the approach of a storm, is also equal to what is manifested in this respect by almost any other animal.

The sheep, in consequence of the warm and oily nature of its fleece, is able to bear the greatest extremity of cold ; and whole flocks, in endeavouring to shelter themselves under a high hedge, or the brow of a steep hill, have frequently been buried many days under the snow without any detriment.

The varieties, observable in this quadruped, are so multiplied that no two countries, nor scarcely any two districts, produce sheep exactly of the same kind. A visible difference is found between all the different breeds, either in the size, the shape, the fleece, or the horns.---The woolly sheep is an inhabitant only of Europe, and the temperate regions of Asia; if it be transported into a hotter country, it not only becomes less prolific, but its flesh loses its flavour, and what is still more remarkable, its wool changes into a long rough kind of hair, which, by its openness, and coolness, is a covering far better suited to a warm climate, than the close and woolly fleece with which it is clothed in these parts of the world; a circumstance which exhibits a remarkable instance of the wisdom and goodness of Divine Providence, in providing for the well-being of all creatures.

The sheep in the mountainous parts of Wales, where they are rendered wild by the unrestrained liberty which they enjoy, do not always go in large flocks, but sometimes graze in parties of about eight or twelve, one of which remains at some distance from the rest, to give notice should any danger approach. When the centinel sees any one advancing, at the distance of two or three hundred yards, he turns his face to the enemy, keeping a watchful eye upon his motions, allowing him, usually, to approach within eighty or a hundred yards; but if the suspected foe proceeds to come nearer, the watchful guard alarms his comrades by a loud hiss, or whistle, twice or thrice, repeated, when the whole party instantly make off with great agility, always flying to the steepest and most inaccessible parts of the mountain.

It is very singular, that in the Holms round Kirkwall, in the island of Mainland, one of the Orkneys, if any person, about the lambing time, enters with a dog, or even without, the ewes suddenly take fright, and through fear, as it is imagined, instantly drop

down dead, as though shot through the head with a musket-ball.

No country produces finer sheep than Great Britain. Those of Spain have finer wool, but their fleeces stand in no degree of comparison with those of Lincolnshire, and many other parts of this kingdom, for weight and general utility.

The Lincolnshire breed of sheep, which, with some variations and intermixtures, is extended through most of the eastern and midland counties of England, is large, and bears heavy fleeces; but the wool is very long, and not so fine as some others; the mutton is also esteemed somewhat coarser than that of smaller-sized sheep. The largest breed of sheep, in the whole island, is found on the banks of the Tees, in that fertile valley which separates Yorkshire from the county of Durham. Some of these sheep have been fed to the weight of fifty pounds per quarter; one, in particular, was found to weigh sixty-two pounds and a half per quarter; this was supposed to be the heaviest sheep ever slaughtered in this kingdom. This breed of sheep is more prolific than several others; but those of Dorsetshire are principally remarked for their extraordinary fecundity, being capable of producing twice a year. From this breed the tables of the great and opulent are supplied with early lamb at Christmas, or sooner if required. Great numbers of these are sent to the London markets, and sold at the enormous price of ten or, perhaps, fifteen shillings per quarter. This circumstance contributes not a little to enhance the value of the Dorsetshire breed of sheep, which, with some variations, is spread through most of the southern counties, but found pure and unmixed only in Dorsetshire and Wiltshire. In the north-west parts of England, there is a hardy, black-faced breed, the wool of which is coarse and shaggy, but the flesh is esteemed excellent. In the northern districts of Scotland, a breed of sheep is common, which is remarkable for the smallness of its size, as well as the fineness of its mutton: their wool, which is also very fine, is streaked with the various colours of black, brown, and red. Some of these

sheep do not weigh above sixty or seventy pounds per quarter.

The Shetland sheep are generally without horns, and handsome, although very small. When fed; they do not weigh more than eight or ten pounds per quarter. This breed of sheep is exceedingly hardy, and consequently well adapted to the severe climate where it is found; but what renders them an object of importance is, that their wool is esteemed by good judges to be equal in fineness to that of Thibet, of which the Indian shawls are made. These sheep have a kind of long hair intermixed among the wool, a singular instance of the providence of the All-wise Creator, in considering the wants of this animal in so cold a climate; for as they are never shorn, the wool is pulled off once a year, and the hair remaining, preserves the creature from the piercing winds of that northern region.

The breed of English sheep has, by the persevering attention of Mr. Bakewell, of Dishley, in Leicestershire, been exceedingly improved; and his example has been successfully followed by many eminent breeders. The improved Leicestershire breed is now in the greatest esteem in most parts of the kingdom, and almost all the principal breeders endeavour to introduce some mixture of it into their stock. Its superior qualities are principally those of fattening quickly, and carrying the greatest weight of mutton upon the smallest portion of bone.

From these circumstances, my dear Sir, you will readily conceive the beneficial effects of those improvements which have been made in our sheep, as well as our horses, and horned cattle, and consider the importance of that respectable body of men, the English farmers, to whose spirited exertions, and skilful management, this country owes, under Divine Providence, the number and excellence of those flocks and herds, which range over our hills, enliven our plains, and constitute an inexhaustible source of plenty and of wealth.

THE TARTARIAN SHEEP.

Tartary produces a breed of sheep somewhat larger

than those of this country. The colour of the ram is brown, mixed with white, and that of the ewe, black and white. Their ears are pendulous, and instead of a tail, nature has furnished them with a large protuberance of fat. These sheep abound in Tartary, and great numbers of them are annually sold into Russia.

The African, or Guinea sheep, are found in most of the tropical countries. They are large, strong, and swift, with short horns, pendulous ears, and coarse hairy fleeces.

THE MANY-HORNED SHEEP.

The sheep of Iceland, Russia, and other cold regions of the north, resemble ours in the form of their bodies, but differ from them in having a number of horns, some having four and others eight. Their wool is long, and intermingled with hair, and their colour a dark brown.

THE WALACHIAN SHEEP

Have long spiral horns, standing upright in the form of a screw. They resemble those of this country in size and shape, and have long shaggy fleeces. They are also found in Crete, as well as in many isles of the Archipelago. The broad-tailed sheep, common in Persia, Syria, Barbary, and Egypt, are remarkable principally for their large and heavy tails, which are frequently a foot broad. The tails of these sheep weigh from twenty to fifty pounds, and are esteemed a great delicacy, being of a substance between fat and marrow.

The sheep of the mountains of Thibet afford wool of an extraordinary length and fineness, of which are made the Indian shawls, frequently sold in this country at the exorbitant price of forty or fifty pounds. Formerly an opinion prevailed, that those shawls were made of the hair of the camel; and it is only since the English began to form a communication with Thibet from India, that the real material of this singular manufacture has been known.

I have, my dear Sir, been somewhat prolix, in exhibiting to you the different kinds of those quadrupeds which are so conducive to our conveniency and comfort, and so essential to our well-being, that we can-

not but consider them as designed by the All-wise and bountiful Creator peculiarly for our use. To examine each species, by following all its varieties, proceeding from soil, climate, and human management, would be an endless, and, indeed, an useless task. My intention is, only to present to your view the great outlines of nature, with which every one ought to be acquainted, that so you may be enabled to form a right judgment of their properties and use, and to conceive some faint idea of the infinite goodness of the great Author of all existence, in creating them for our benefit, as well as of his power and wisdom in giving them qualities so perfectly adapted to that purpose. Our views of these subjects will still be enlarged, when we consider, that of the sheep, as well as of the ox, there is scarcely any production that is not useful to man. Of the fleece we make our clothes; the skin produces leather suitable to a multiplicity of purposes; and the very entrails are formed into strings for violins and other musical instruments. It must also be observed, that the milk and butter, produced from sheep, constitute in some countries no inconsiderable article of food: and although inferior to the same productions of the cow, might serve as a very good succedaneum, if Providence had not supplied us with that useful and excellent quadruped, which affords another striking instance of the prolific bounty of the Creator in affording us such a variety of resources.

One particular and very interesting circumstance, relative to the animal now under consideration, must not, my dear Sir, be forgotten. It merits your attention and will furnish your mind with a copious fund of reflection, as it will enable you to comprehend the great importance of our sheep as an object of national advantage. In the reign of Edward the Third, when the English wool was exported, it brought in 150,000*l.* per annum, a vast sum in that age. At this time, the value of the wool, annually shorn in England is estimated at about five millions sterling, and when manufactured conjointly with the Spanish wool imported, to the annual amount of not more than six or seven

hundred thousand pounds, the value of the cloth must be above twenty millions sterling. Our woollen manufactory stands unrivalled by any nation, and employs a greater capital, produces a greater profit, and furnishes employment to a greater number of hands, than any other manufacture in Europe, or probably in the world. Thus you will perceive, my dear Sir, that the sheep of this island, besides supplying us with the most essential comforts and conveniencies of life, are the support of our commerce and population, as well as one of the great sources of our wealth. When you have given these considerations their due weight, you will not, I presume, adopt the principle advanced by some naturalists, who pretend that animals were not primarily intended for the use of man, but are only capable of a secondary application to his purposes; for it is evident, that in many instances, what these philosophers term the secondary purpose, is so manifest and so essentially necessary to our comfortable existence, that we cannot, without impropriety, as well as ingratitude, suppose it to have been excluded from the original design of the All-wise and bountiful Creator. The wonderful qualities and varied utility of the horse, the cow, and the sheep, exhibit a striking example of this subordination of the animal race, and of an adaptation to the circumstances and wants of the human species, which evidently appears to be the effect of an all-wise design, and a constituent part of a comprehensive plan. In order to perceive the reasonableness of this hypothesis, you have only to consider the benefits we derive from these animals, and the difficulties under which mankind must have laboured without them, or some others which might have served as substitutes. The important and interesting reflections, both moral and religious, which these three excellent species of quadrupeds, so commonly seen, but so seldom viewed with a philosophic eye, are calculated to excite in the contemplative mind, will, I flatter myself, be a sufficient apology for the prolixity of this article, and a proof of the sincere affection with which I am, dear Sir,

Your's, &c.

LETTER XVII.

..... "The mountain's brow,
 Where sits the shepherd on the grassy turf
 Inhaling, healthful, the descending sun;
 Around him feed his many-bleating flock,
 Of various cadence; his sportive lambs and goats,
 'This way and that convolv'd in friskful glee,
 Their frolics play."

THOMSON.

DEAR SIR,

I SHALL now proceed to entertain you with a description of another kind of animal, which, although in some respects it bears a considerable resemblance to the sheep, differs from it so widely in others, as to give evident proofs of a distinction of species. This you will readily perceive to be the goat, which in some countries is esteemed no mean substitute for the highly useful animal which was the subject of my last. Before we proceed in this view of the works of nature, we must cast a glance at a creature which seems to be so nearly allied to each of the two species, as to form one of those connecting links which we so often perceive in the continued chain of animal existence.

THE MUFFLON, OR MUSMON.

So much resembles, in some respects, the sheep, and in others, the goat, that it has, by different naturalists, been classed with each of the two species. Its horns resemble those of the ram; they are bent backward, and in all their convolutions sometimes measure from five to seven feet in length. The old rams of this kind often have desperate conflicts, and sometimes precipitate one another from the summits of the rocks which they frequent. From their covering, which is hair, they seem to participate more of the species of the goat than that of the sheep, and they appear to partake of the disposition of the former, in frequenting the highest and most rugged parts of mountainous countries. This renders the hunting of the musmon, which is much practised by the Tartars

and Kamtschadales, extremely difficult and dangerous. The musmons of Kamtschatka grow to the size of a young stag, and are said to be so strong, that ten men are hardly able to hold one of them. The horns are also extremely large, and are made use of for a variety of purposes. This animal is found in the uncultivated and mountainous parts of Greece, Sardinia, and Corsica, and also in the desert plains of Tartary. In the swiftness of its running, it resembles the deer more than either the sheep or the goat. As it has been known to breed with the common sheep, Buffon, and many other naturalists, have supposed it to be the primitive race of that animal. Whether or not this be the case, is, however, a problem of which the solution is difficult, if not impossible.

THE COMMON GOAT

Occupies the next place in the scale of animal existence, and although inferior in utility to the sheep, has in many respects a visible affinity to that quadruped; but the services of the latter cause the goat to be held in less estimation, and its domestication and improvement to be considered as an object less worthy of attention. The goat is more hardy than the sheep, and in every respect better adapted to a state of liberty. It is stronger, swifter, and more playful; not easily confined to a flock, but chusing its own pasture; it delights to roam at large. It is easily sustained, and appears to have a stronger inclination for liberty than for delicacy of food. For this reason it is valuable chiefly to the inhabitants of wild and mountainous countries, where it finds an ample supply from the spontaneous productions of nature in situations inaccessible to most other quadrupeds. Goats climb the loftiest rocks, and stand secure on the brink of the most abrupt precipices; for this purpose their feet are admirably formed by nature, the hoofs being hollowed underneath with sharp edges, resembling the inside of a spoon, which prevents them from sliding off the craggy rocks which they frequent. This singular conformation of the feet of this animal exhibits a remarkable instance of the wisdom and goodness

of the Creator, in so perfectly adapting its organization to its instincts.

The goat delights in the uncultivated heath, or the shrubby rock, rather than in the fields cultivated by human industry. It bears well either a hot or a cold climate. Its milk is of an agreeable taste, highly nutritive, and medicinal, especially in consumptive cases. Several places, in the mountainous parts of Ireland, Scotland, and Wales, are much resorted to by valetudinarians, for the purpose of drinking the milk of the goat, and its effects are often found salutary in vitiated and debilitated habits.

Sonnini, in his edition of Buffon's Natural History, gives a curious instance of the readiness with which the goat will permit itself to be sucked by animals of a different kind, and even of a much larger size than itself. He tells us, that he saw in the year 1780, a foal that had lost its mother, thus nourished by a goat, which was placed on a barrel, in order that the foal might suck with more convenience. The foal followed its nurse to pasture, as if she had been its mother, and was attended with the greatest care by the goat, which always called it back by her bleatings, when it wandered to any distance from her.

These animals, from extreme familiarity, will sometimes become troublesome. Buffon relates, that in 1693, an English ship, having gone into an harbour in the island of Bonavista, two negroes went on board, and offered the captain as many goats as he chose to carry away. He expressed his surprise at this offer, when the negroes informed him that there were only twelve persons on the island, and that the goats had become so numerous, as to be extremely troublesome; for, instead of being difficult to catch, they followed them about with an unpleasant degree of obstinacy, like other domestic animals.

In many of the mountainous parts of Europe, goats constitute the principal wealth of the inhabitants, and supply them with many of the necessities and conveniences of life. They lie upon beds made of their skins: they live upon their milk without bread,

and make from it both butter and cheese. The flesh of the kid is esteemed a rarity, and considered as little inferior to venison. From these considerations, it appears that the goat, although superseded in this country by the sheep, is a quadruped of very considerable value.

THE IBEX,

According to M. Buffon, is the parent stock from which our domestic goat is descended ; and, indeed, the former is very similar to the latter in the shape of its body, but differs considerably from it in the shape of its horns, which are much larger. The ibex frequents the most elevated parts of the Alps, in the Vallois, and the country of the Grisons. It is also found in the mountains of Crete. It is extremely wild, and the chase of it exceedingly dangerous, as it always keeps upon the highest points of the rocks, and being very strong, frequently turns upon the huntsman, and hunts him headlong down the precipice. It will mount a perpendicular rock of fifteen feet at three leaps, or rather at three successive bounds of five feet each. It does not appear to find any footing on the rock, but seems to touch it merely to be repelled, like an elastic substance striking a hard body. In the last extremity, this active and intrepid animal can throw itself from the tops of the highest rocks, and escape unhurt.

The colour of the ibex is generally a dark brown, intermixed with a little grey ; a streak often runs along the top of its back ; the belly and thighs are of a delicate fawn colour.

THE CHAMOIS GOAT

Inhabits the same districts as the ibex, and abounds in the mountains of Dauphiné, Piedmont, Savoy, and Switzerland. They are seen in flocks of eighty or an hundred dispersed among the craggs of those stupendous mountains. The chamois resembles in size the common goat, but is greatly admired for the beauty of its eyes, which are round, sparkling, and animated. Its head is ornamented with two horns, of about half a foot long, of a beautiful black, rising from the fore-

head almost between the eyes. These horns stand forward, bending a little back towards the extremities, and ending in a sharp point. The ears are elegantly placed near the horns, and two stripes of black adorn each side of the face; the rest being of a pale yellow. This animal has scarcely any cry, except a feeble bleat by which it calls its young; but in cases of danger, when it gives warning to the rest of the flock, it makes through its nostrils a hissing noise, which is heard to a great distance. It is extremely vigilant, and to an eye remarkably quick and piercing, adds a scent not less acute and distinguishing. When it perceives its enemy distinctly, it stops a moment, then, in an instant, takes flight; and it is said to be able, by the acuteness of its smelling, to discover a man at the distance of more than a mile. Upon any apprehension of danger, the chamois begins a loud hissing. The first hiss is in the beginning very sharp, but deeper towards the close, and continues the whole time of one respiration. Having, after this first alarm, reposed itself for a moment, it looks round, and if it perceives the danger to be real, it continues to hiss at intervals. During this time, the animal seems in the most violent agitation, striking the ground with its fore-feet; it bounds from rock to rock, and flies to the edges of the precipices to look for the enemy. It is said, that some of them always act the part of sentinels; and it has generally been observed, that, where a herd of them is seen feeding, two or three are mostly detached from the rest. The hunting of the chamois is attended with the same difficulties and danger as that of the ibex; and like the latter, it will, when hard pressed, turn upon the hunter and precipitate him from the top of a craggy rock, where he must meet with inevitable destruction. The usual method of taking them, is by placing persons at all the passages of a glade or valley, and shooting them from behind the clefts of the rocks. Their extreme swiftness renders them unapproachable by any mode of pursuit, and dogs are totally useless in this chase. They run along the craggs with such rapi-

dity, and bound from rock to rock with such ease, that no other animal can follow them ; and nothing can be more astonishing, than the extraordinary facility with which the chamois climbs and descends precipices, that to all other quadrupeds are inaccessible. These animals will frequently leap from a rock of thirty feet high, and light with the greatest security on some fragment or excrescence on the side of the precipice, which is only just large enough to place their feet on ; and such is the extreme quickness and agility of their motion, that to a spectator, they seem rather to fly than to leap. Such extraordinary advantages has the Great Creator given to this singular quadruped, to serve as means for its preservation.

The chamois, notwithstanding its extraordinary wildness, is, when caught, very easily rendered tame and docile, and like other animals of the goat kind, soon becomes attached to good treatment. Its flesh is very good and wholesome, and the skin of the chamois was once reckoned, when tanned, exceedingly valuable for its softness and warmth. At present, however, the leather called shammy, is made also from the skins of the deer, the sheep, and the domestic goat.

The chamois is so much incommoded by heat, that in summer they are never found any where but under the shade of high and spreading trees, in the caverns of rocks, amidst fragments of ice, or under rough and over-hanging precipices, facing the north, as they cannot bear the rays of the summer's sun. They pasture only in the evening or morning, and when the day begins to grow warm, always retire to their shady recesses. Thus we find, that an all-wise Providence has, in every respect, adapted the nature of this, as of every other creature, to the region which it is destined to inhabit.

THE GOAT OF ANGORA

Is remarkable for its long, thick, and glossy hair, which is of a dazzling whiteness, and is highly valued as a profitable article of commerce ; for of this are made those beautiful cloths, well known among



us by the name of Camblets. These animals, as well as the sheep of Tibet, so famous for the fineness of its wool, from which the high-priced Indian shawl is made, might, in all probability, thrive as well in Britain as in their native country, and if once introduced, would not only tend to beautify and enliven the rugged scenes of our most bleak and barren mountains, but render the uncultivated and unproductive parts of the island a source of utility and wealth. In Portugal there is also a breed of fine large goats, remarkable for their abundance of milk, of which some yield not less than six quarts per day. These also, if introduced into some of the mountainous and barren tracts of this island, might be an useful acquisition.

From what has been already said of the horse, the ass, the cow, the sheep, and goat, you will easily perceive, that, to trace the varieties of a single species, through all its shades of discrimination, would be both an useless and an endless task; the same might be observed of most other animals. Difference of climate, and of the quality and quantity of aliment, influence in some degree all animal life; and a thousand other circumstances, many of which are visible, and others unknown, concur to produce innumerable varieties in each species. As it is not my design to perplex you with these minutiae, I shall omit all tedious details, and only endeavour to present to your attention those general outlines of nature, which, without fatiguing your mind, or overburdening your memory, will impel you to admire the power, the wisdom, and the goodness of the Creator, which are so evidently displayed in the comprehensive grandeur and benevolence of his immense and complicated plan. This task, which my friendship for you imposes, I shall endeavour to execute in the best manner I am able; and at least the sincerity of my desire, to communicate to you instruction so important, and information so interesting, will convince you that, with every sentiment of affection and esteem,

I am, dear Sir, your's &c.

LETTER, XVIII.

"From rock to rock the swift antelope springs."

ANON.

DEAR SIR,

I HAVE exhibited to your view the principal varieties of the sheep and the goat kind, and the approaches they make towards each other by continual, and in some respects, almost imperceptible gradations. Nature, indeed, proceeds in her variations by insensible degrees, and a line of distinction can sometimes scarcely be drawn between her varying shades, or a discrimination made between two neighbouring tribes of animal life. In almost all transitions, from one kind to another, a middle race is found, which appears to partake of the nature of both, and which yet cannot precisely be classed with either.

THE GAZELLES, OR ANTELOPES,

From one of those connections of animated nature, holding a middle rank between the goat and the deer; and although they have, by some systematic writers, particularly Linnæus, been classed with the goat kind, yet some others have considered them as a distinct race; and indeed, if they have properties in common with the goat, especially the similitude of their horns, and the circumstance of not casting them, they greatly resemble the deer in other respects. The characteristics which distinguish this tribe of animals, both from the goat and the deer, are chiefly these: The horns are annulated, and have longitudinal furrows running from the base to the apex. Of all animals, deer kind have the most beautiful eyes, to which the Eastern poets make frequent allusions, in describing the attractive glances of their favourite mistresses. Besides the extraordinary beauty and mildness of its aspect, the gazelle surpasses the roebuck in the delicate formation of its limbs, as well as in the fineness and glossiness of its hair. It is elegant in its shape, and rapid in its motions; of a restless and timid disposition; vigilant and vivacious; and its boundings

are astonishingly light and elastic. These may be considered as the general characteristics of all the different species, of which our limits permit us to enumerate only a few, although they are ramified into almost numberless varieties. Of these we shall remark the

BLUE GOAT,

So named from its colour, which is a fine blue, and shines with a gloss resembling that of velvet. Its belly is white, and beneath each eye it has a large white mark: its tail is about half a foot long, with a brush of long hair at the end: its horns are turned backward, and three-fourths of the length, from the base, is decorated with twenty-four rings: but the uppermost quarter is smooth, and terminates in a point. This animal inhabits the hottest parts of Africa.

THE WHITE ANTELOPE,

Is supposed to be the pygarg, mentioned in the book of Numbers. It is an inhabitant of Africa, and in the neighbourhood of the Cape of Good Hope, herds of several thousands sometimes cover the plains. It must, however, have once been an inhabitant of Palestine, or at least of Egypt or Arabia; for it is not to be supposed, that the prohibitions of the Jewish law would have comprehended a quadruped, found nowhere but in the torrid zone, or in the southern parts of Africa.

The white antelope is a beautiful creature, about two feet and a half high, and about three feet in length. The distance of its horns, at the base, is about one inch: from thence they gradually expand, to the distance of five inches, then turn inwards, and approach within about three inches of each other at the points: they are of a deep black, annulated about half way up from the base, quite smooth towards the top, and terminating in a sharp point.

The predominant colour of this beautiful animal, is a light brown: its breast, belly, and inside of the limbs, are white, as is also the head, with the excep-

tion of a dark brown stripe, extending from each corner of the mouth to the base of the horns : a stripe of the same colour runs along each side, from the shoulders to the haunches, forming a boundary between the snowy whiteness of the belly and the light brown of the sides : the buttocks are white, and a stripe of white, bounded on each side by one of dark brown, extends from the tail, half-way up the back ; the tail is very slender, the lower part of it not being much thicker than a goose-quill ; the hair is in general fine and short, but the dark stripes consist of hair longer than the rest. In the pursuit of these animals, it is equally curious and pleasant, to see the whole herd bounding over one another's heads to a considerable height. Some of them will take three or four high leaps successively. In this position they seem suspended in the air, looking over their shoulders and shewing their beautiful white backs. They are so extremely swift, as to require a fleet horse to overtake them. Their flesh is very well tasted, juicy, and delicate.

THE ELK ANTELOPE

Is likewise an inhabitant of the southern parts of Africa and also of India. It has straight horns, two feet long, and of a dark brown colour, marked with two prominent spiral ribs, running two-thirds of their length, the tops smooth, with an inward inflection. The forehead is flat, with a crest of hair standing erect the whole length of it. This animal is one of the largest of the gazelle kind : it is of a bluish ash colour, and has a black mane, which stands upright, and runs the whole length of the back as well as of the neck. The elk antelopes live chiefly in the plains and vallies, and when hunted, always endeavour to run against the wind. The Dutch colonists, in the Cape settlement, are very expert in hunting this animal.

THE GEMSEBOEK

Is another species of antelopes, famous for a concretion in the stomach, called the oriental bezoar. The power of expelling poison, which ignorance for-

merly attributed to it, caused it to be estimated at an enormous value.---Some bezoars have been sold as high as 200l. Experience, however, has discovered, that its virtues are only imaginary, and this once-celebrated medicine is no longer used in countries where the study of nature has dispelled the mists of ignorance.

These descriptions of the principal distinctions of the gazelle, or antelope kind, are taken from that accurate and indefatigable investigator of nature, Dr. Sparman, who, from his residence at the Cape, and his active researches, was especially qualified to inform us of the nature and qualities of the animals in the southern parts of Africa. He mentions a number of other varieties of the antelope, without entering into any details of their characteristics or qualities. Indeed, the most laborious naturalist must leave something imperfect. The beauties of the creation, both in the conformation of animals and the disposition of inanimate matter, are innumerable, and the ever-varying forms of nature baffled discrimination and exhaust description.

Other naturalists have added descriptions of the other animals of the antelope kind, which have been described by naturalists ; it will, in this compendium, suffice to mention the names, as the reebok, the grys-bok, the klip springer, the gnu, the steenbok, and the nauguer. We shall only, remark, that

THE COMMON ANTELOPE,

Which abounds in all the northern parts of Africa, is somewhat less than the fallow deer ; that its horns, which are remarkable for a beautiful double flexion, are about fifteen inches long, and surrounded with prominent rings almost to the top, where they are about a foot distant from point to point, and that its colour is brown, mingled with red on the back, and white on the belly and inside of the thighs. The Barbary antelope, which is also very common, not only in the northern parts of Africa, but also in Syria and Mesopotamia, seems only to be a variety of the

last mentioned animal, to which it bears a striking resemblance,

THE CHEVROTAIN, OR LITTLE GUINEA DEER,

Cannot, however, be omitted, as it is not only the smallest, but also the most beautiful of all the antelope kind, and indeed of all the cloven-footed quadrupeds. It is no larger than a half-grown cat, but in its shape it is elegant beyond description. Its fore-legs, at the smallest part, do not much exceed the thickness of a tobacco-pipe : its horns are straight, scarcely two inches long, and of a shining jet black. The colour of some of these elegant little animals, is a reddish brown, of others a beautiful yellow, and their hair is short and exceeding glossy.---These handsome little creatures are natives of Senegal, and other hot parts of Africa. They are also found in India, as well as in Ceylon, and many others of the oriental islands ; but they can subsist only in a hot climate, and are too delicate to be kept alive in Europe.

These are only a few of the varieties of the gazelle kind, of which the ramifications and subdivisions are almost innumerable. They are, however, sufficient to excite you to admire the unlimited power, incomprehensible wisdom, and diffusive goodness of the Great Creator, displayed in the prolific energy of Nature.

With affection and esteem,

I am, dear Sir,

Your's, &c.

LETTER XIX.

.... " Unharbour'd now, the royal stag forsakes
His wonted lair ; he shakes his dappled sides,
And tosses high his beamy head—the copse
Beneath his antlers bends."

SOMERVILLE.

DEAR SIR,

PERMIT me, at this renewal of our correspondence, to entertain you with a few observations on a race of animals, which seem designed by the Creator to embellish the forest and animate the solitudes of uncul-

tivated nature. The deer, inoffensive and peaceable, elegant and active, cannot be viewed without pleasure, and the branching antlers of the stag, apparently calculated for ornament rather than for either aggression or defence, render him, if not one of the most useful quadrupeds, at least one of the most superb and beautiful forms of the animal creation. These horns of the stag are the index of his age: the first year exhibits only a short protuberance; the second year the horns are straight and single; the third produces two antlers; the fourth three, and the fifth four. After the stag has attained his sixth year, the number of his antlers being sometimes six and sometimes seven, cannot be considered as an exact criterion. In the beginning of March, the old ones shed their horns, but the young ones not before the middle of May. During this troublesome period, they separate themselves from the herd, and wander solitary and dispirited over the plains until their antlers are grown, and have acquired their complete hardness, expansion, and beauty. This operation of Nature is completed about the end of July, when the stags leave their retreats and return to the herds.

In England the usual colour of the stag is red, in other countries brown or yellow. His eye is remarkably beautiful, being at once brilliant and mild, and both his hearing and smelling are extremely acute. The stag is five years in coming to his perfection, and lives about thirty-five or forty. It is now a generally received opinion among naturalists, that animals live seven times the number of years required to bring them to perfection; but whether this opinion be sufficiently confirmed by experience, appears somewhat problematical.

The hind is the female of the stag; her head is not adorned with antlers, and she is smaller than the male. The hind goes between eight and nine months with young, and generally brings forth in May or June. She is exceedingly attached to her offspring, and will make the dog, or even the wolf, sometimes give back by her efforts for its preservation, while

the stag is so unnatural as to be one of its most dangerous enemies; and he would soon destroy the fawn, if not prevented by the maternal care of the dam, in concealing the place of its retreat.

The following historical fact, shews that the stag is capable of an extraordinary degree of courage. Some years ago, a tiger and a stag being inclosed in the same area, the stag, when attacked, made so resolute a defence, that his assailant was obliged to desist. During the reigns of our first Norman kings, the passion for hunting the stag was carried to such excess, that it was esteemed as small a crime to murder one of the human species as to destroy one of these animals. In our island large tracts of land were converted into forests for deer. Happily for mankind, these wide-extended scenes of desolation and oppression have been gradually contracted: agriculture has spread itself over the land; beasts of chase have given way to the ox and the sheep, and lowing herds and bleating flocks enliven the face of the country, and increase the national wealth.

THE FALLOW DEER

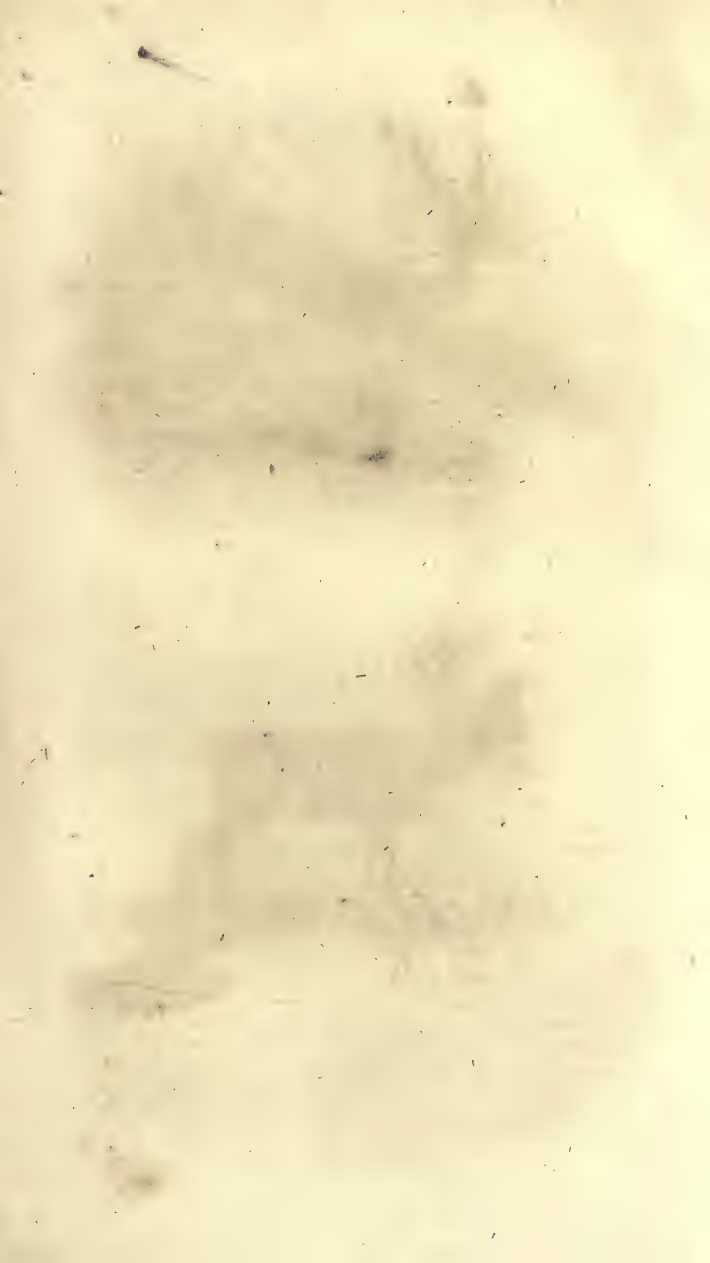
Is well known in this country: though it very much resembles the stag, they are a distinct species, and so determined an animosity exists between them, that, although both are gregarious, they will not herd together. The fallow deer is inferior to the stag in size and strength; it is seldom found wild in the forest; but it constitutes the ornament of the park. Its horns, instead of being round like those of the stag, are broad, palmated at the top, and better furnished with antlers. Dissentions about pasturage frequently occur among these animals; and in such cases, the herd divides into two parties, and an obstinate engagement ensues, to determine the possession of some favourite part of the park. Each party has its leader, which is always the oldest and strongest of the herd. They attack in regular order, fight with courage, support one another, retreat, rally, and seldom give up the contest, in consequence of one defeat. The combat is frequently renewed several days successively, till, after



Antelope.



Roe Deer.



being repeatedly vanquished, the weaker party is obliged to leave the conquerors in possession of the disputed territory. The fallow deer goes eight months with young, comes to perfection in three years, and lives about twenty. There are many varieties of the fallow deer. In England we have two sorts: the spotted, supposed to have been brought from Bengal, and the deep brown, originally introduced from Norway into this country, by King James the First. The deer, in its different varieties, is a race of animals extensively diffused, and appears to be spread over almost every part of the globe. The new world, where neither the sheep, the goat, nor the gazelle, were originally bred, is known to have been the native abode of the deer. The whole continent of America abounds with stags and other animals of the deer kind, in almost all their varieties; and in some parts, the inhabitants have domesticated them, and find a rich supply of food in the milk and cheese which they produce. Thus the same animal, which, in some countries, contributes only to the amusement of man, is in another converted to his use, and supplies his wants. This shews the diffusive bounty of the Creator, in rendering the stores of nature so various and abundant, that necessity, if aided by industry and skill, is never at a loss for resources.

THE ROEBUCK

Is the smallest of the deer kind. Though formerly common, the breed is nearly extinct in this country; but in the mountainous parts of Scotland it yet abounds. The form of this animal is elegant, and its agility astonishing: it bounds seemingly without effort, and runs with great speed: in courage it is at least equal to the stag, and its subtle artifices, when hunted, are proofs of its cunning: it turns repeatedly, till it has, by its various zig-zags, entirely confused the scent. The crafty animal thus confounds the dogs, until they are completely bewildered. The roebucks do not associate in herds, like other deer, but live in separate tribes.

THE ELK

Is a native both of the old and the new continent, being known in Europe by the name of the elk, and in America by that of the moose deer. It is the largest of all the deer kind, and according to some accounts, exceeds in size every other quadruped. The latter assertion, however, seems to be of doubtful authority; for naturalists vary considerably in their descriptions of this animal; and while some affirm that it grows to the height of twelve feet, others describe it as not much exceeding the size of the horse. When so much disagreement is found, either in description or narrative, the degree of credibility remains problematical. Those who speak of the enormous moose deer, say that their horns are six feet long, and above ten feet asunder at the top; and from a variety of these horns, preserved in the cabinets of the curious, there is every reason to conclude, that the animal to which they belonged must have been of an enormous size and great strength. Those also, who have traversed and described the interior of North America, assert, that in certain places both horns and bones have been found of a size so enormous, as to shew that they have belonged to animal of a larger species than any now known, and which is supposed to be at this time, through some unknown cause, extinct. The European elk, however, generally grows to the height only of seven or eight feet, and the length of ten feet from the muzzle to the rump. Its colour is mostly a hoary brown, and its hair long and coarse, like that of the bear. The horns are very large and spreading. Its pace is a kind of high trot, shambling and inelegant, but it runs with great swiftness. In passing through woods, it carries its horns horizontally, in order to prevent them from being entangled among the branches.

In Canada they have two different methods of hunting the elk, which are equally curious. The first is this: before the lakes are frozen, a number of the inhabitants assemble in canoes, and form a vast crescent on the water, each end reaching the shore, while a party on the land surround an extensive tract.





Stag.



Musk.

They are attended by dogs, and press forward with loud and clamorous shouts. The elks, alarmed by the noise, fly to the lake and plunge into the water, where they are easily killed by the people in the canoes. The other method requires more preparation. The hunters enclose a large space of ground with stakes and branches of trees: the bottom opens into another enclosure, which admits of no egress, into which they drive the elks, where they are entangled in snares or shot. The flesh of the elk is extremely palatable and nutritive; the tongue is excellent; and the nose is esteemed the greatest delicacy of Canadian epicurism.---The skin makes excellent buff leather, being both strong, soft, and light, and of it the Indians make their snow-shoes, and sometimes their canoes. The elk is an inhabitant of all the northern parts of America, and also of Europe and Asia, from Norway to the easternmost limits of Chinese Tartary; but is never found in any warm climate. That it once existed in Ireland is evident, from the horns which have been dug up in different parts of that island, and by their enormous size, seem to corroborate the almost incredible accounts that some naturalists have given of the magnitude of the largest breed of these animals.

THE REIN-DEER

Must be considered as an animal which merits, in the highest degree, the attention of the naturalist, as it exhibits an evident and most striking instance of the beneficence of that Being, whose omnipotent fiat called all creatures into existence. This extraordinary quadruped is a native of the icy regions of the North, where, by a wise and bountiful regulation of Providence, which diffuses the blessings of the creation, in some degree, over every part of the habitable world, it exists for the support and comfort of a race of men, who, inhabiting a country, where the beauties of nature are unknown, and dreary sterility ever reigns, would find it impossible to subsist among their frozen lakes and snowy mountains, without the advantages which they derive from this inestimable do-

mesticated animal. In temperate regions, the unbounded liberality of nature furnishes a profusion of conveniences and comforts, and a variety of supplies for almost every want ; but to the Laplander, in his hyberborean abode, the horse, the cow, the sheep, and the goat, are all unknown. The rein-deer, however, supplies the place of all these useful animals. From this single quadruped the Laplanders, and other inhabitants of these frozen regions, derive all those comforts that can render existence supportable in that inhospitable climate. It supplies the place of the horse, in conveying them over tracks that would otherwise be impassable ; that of the cow, in affording them milk ; and that of the sheep, in clothing them, not with its fleece, but with its skin : its very sinews supply them with thread, and there is scarcely any part of this animal that is not, in some degree, conducive to their comfort.

The rein-deer, in Lapland, are of two kinds, the wild and the tame ; and the former being the strongest and most hardy, the latter are frequently turned into the woods in order to produce a mixed breed, which is generally preferred, especially for drawing the sledge, to which they are trained at an early age. They are yoked by a collar, from which a trace passes under the belly to the fore-part of the vehicle. These carriages are extremely light, and covered at the bottom with a rein deer's skin. The person, who sits in the sledge, guides the animal with a cord fastened to its horns, and drives it with a goad. The wild kind, when yoked, sometimes prove refractory, turn against their master, and strike so furiously with their feet, that he is obliged to cover himself with his sledge, until the enraged creature has exhausted his fury ; but the tame ones are active and patient. A Laplander will, in this manner, travel about thirty miles a day, without forcing the rein-deer to make any extraordinary effort. This mode of travelling can be used only in the winter, when the country is covered with snow ; and though it is expeditious, it is troublesome and sometimes dangerous.

As the rein-deer constitutes the sole riches of the Laplander, and is the source of his comforts, it may reasonably be supposed, that a constant attention to its preservation is his principal employment. As soon as the summer commences, the rein-deer are removed from the low pastures, where they would be constantly tormented by the insects, generated in the woods and morasses, and driven up to the mountains, where they are less incommoded. The guat and the gad-fly are their greatest and most formidable enemies. Every morning and evening, during the summer, the herdsman returns to the cottage with his deer to be milked; and a large fire of moss is made, for the purpose of driving off the gnats by the smoke. The quantity of milk, afforded in a day by one rein-deer, is about a pint, and it is sweeter and more nutritive than that of the cow.

The rein deer is found wild in the northern parts of America, and abounds in the vicinity of Hudson's Bay. It is also common in all the northern regions of Europe and Asia, from Lapland to Kamtschatka. Several of the Laplanders possess herds of them to the number of five or six hundred, and some of the richest of the Kamtschadales are said to have several thousands. It is well known, that of every kind of deer the flesh is exceedingly palatable, wholesome, and nourishing; in every country, indeed, venison is esteemed a luxury. How happy a circumstance is it, therefore, to the inhabitants of the countries beyond the arctic polar circle, that the All-bountiful Creator has furnished them with so useful an appendage to human existence, in these rigid climates, as the rein-deer, which, after having during its life so essentially contributed to their comfort, affords them after its death so excellent a repast. I have expatiated somewhat more largely on this article, as it exhibits so conspicuous an instance of the diffusive bounty of the Author of Nature, in thus providing for the subsistence of all his creatures, in every country, and under every climate; counter-balancing evil with good, in more equal proportion, and

disseminating his blessings by a more impartial distribution; than we should, on a superficial view, be inclined to imagine. Leaving you to the enjoyment of these reflections, I shall conclude with assuring you, that, most affectionately,

I am, dear Sir,

Your's, &c.

LETTER XX.

" And lives the man, whose universal eye
Has swept at once the unbounded scene of things;
Mark'd their dependence so, and firm accord,
As with unfaltering accent to conclude,
That this availeth nought?"

DEAR SIR.

THE curious and singular animals, which I am going to make the subject of this epistle, are so imperfectly known to naturalists, and their distinguishing characteristics are so mixed and dubious, that it has not yet been determined in what class of quadrupeds their place ought to be assigned.

THE MUSK,

Which is an animal, interesting both in the view of nature and the history of commerce, is found in the kingdom of Thibet, in some of the Chinese provinces, in the vicinity of the lake Baikal, and near the rivers, Jenesea and Argun, from the 60th to the 45th degree of latitude, although seldom so far south, unless when heavy falls of snow prevent it from procuring food in the more northern climates. It has no horns, and whether it be a ruminating animal is uncertain: it is about two feet high at the shoulders; but its hind-legs are longer than the fore-legs, and it resembles the roebuck in form. Its length is about three feet from the head to the tail, which latter is not above an inch long. Its colour is a rusty brown on the body, but under the belly is white. Upon the whole, it seems chiefly to have an affinity to the deer kind.

This animal is principally remarkable for the perfume it produces, which is so well known in the

fashionable world, and so much used in the practice of physic. This drug is found in a bag, or tumor, nearly of the size of a hen's egg, which grows on the belly of the male. Of these bags many thousands are annually sent to Europe, besides what are used in the East. Tavernier tells us, that, in one journey, he collected 7673 musk-bags. To account for this amazing supply, it is by some supposed, that the musk is often adulterated and mixed with the blood of the animal.

It is generally asserted, that when the musk-bag is first opened, so powerful an odour comes from it, that every person present is obliged to cover his mouth and nose with several folds of linen; and that notwithstanding this precaution, the blood will frequently gush from the nose. When the musk is fresh, a very small quantity, in a confined place is insupportable: it causes giddiness in the head and hæmorrhages, which have sometimes proved fatal.

THE NYL-GHAU

Is a curious and beautiful animal, which seems to be of a middle nature, between the cow and the deer, to both of which it bears a resemblance. In size it exceeds the latter, as much as it falls short of the former: its body, horns, and tail, are similar to those of the cow, and the head, neck, and legs, resemble those of the deer. The colour is generally grey, from the mixture of black hairs and white. Along the ridge of the neck, the hair is blacker, longer, and more erect, forming a short, thin, and upright mane. Its horns are about seven inches long, and six inches in circumference at the base, terminating in an obtuse point. The ears are large, broad, and beautiful, being about seven inches in length, and of a white colour on the edge and the inside, except where marked in the hollow with two black bands, resembling the stripes of the zebra. The height of the nyl-gchau has been measured, and found to be four feet. Several of these animals were introduced into this country in the year 1767, which continued to breed annually for some years. They were mild and gentle, pleased with familiarity, and fond of licking the hands of any person.

who stroked them, or gave them food, and never appeared inclined to use their horns offensively. Their sense of smelling seems to be very acute, and they snuff exceedingly when any person approaches them. In the rutting season, however, they are fierce; and a labouring man, having approached the inclosure where some of these animals were kept, the nyl-ghau made furiously at him, with the rapidity of lightning, and darted against the pailing with such force as to break one of its horns, which occasioned its death.

The animals here described, appeared to be of a middle race, partaking of two different kinds, although it is difficult to determine which has the preponderancy. The singular quadruped, which will be our next object of attention, has by some been also considered as of a middle nature; but it seems rather to be a distinct genus.

THE CAMELEOPARD,

When standing erect, measures in height, to the top of the head, seventeen or eighteen feet; but its hind-legs are little more than half as long as the fore ones, a disproportion which prevents it from running swiftly, and renders its pace waddling and inelegant. Its neck is not less than seven or eight feet in length, and decorated with a short mane: its head is also adorned with two perpendicular horns, covered with hair, and tufted at the ends with a circle of short black hairs: its ears are long, and its eyes brilliant and large. The colour of this animal is a light grey, which in the male is interspersed with spots of a dark brown colour over the whole body, and of a pale yellow in the female. It is a timid and gentle creature, being equally destitute of the means of attack and defence, and by the disproportion of its parts, ill calculated for flight, which is probably the cause of its being so rare. It lives wholly on vegetables, ruminates, and is cloven-footed.

This singular rarity of animated nature is found only in the most sequestered regions of Africa, (M. Buffon says that it is also a native of India) and is very seldom exhibited in Europe. It was, however,

known to the Romans before the Christian æra, and exhibited in their public games. History informs us, that Pompey produced ten of these extraordinary animals at once, in one of the amphitheatres of Rome, a striking instance of the enormous expence with which the leading men among the Romans used to amuse and influence the citizens, by the splendour of their public spectacles, and the gratification of popular curiosity. The cameleopard has, indeed, at all times been regarded as a wonderful production of nature, and is well calculated to excite our admiration of that Almighty and All-creating Power, which has replenished the earth with life in such a variety of forms.

I am, dear Sir,
Your's, &c.

LETTER XXI.

..... " Patient of thirst and toil,
Son of the desert."

DEAR SIR,

WE come now to the delineation of a species of quadrupeds, equally curious and interesting. The camel and the dromedary are in some countries not less useful and necessary, than the horse is in others, and render the most essential services to man in places where that noble animal would lose all his utility.

THE CAMEL

Is a native of Arabia, and is chiefly confined to that and the adjacent countries, where it has, from time immemorial, been used in traversing those immense deserts of parched sand, which are impassable to every other quadruped except the dromedary, which, although distinguished by a different name, is supposed to be originally of the same race. The camel is to the Arabian what the rein-deer is to the Laplander, and supplies the place of the horse, the cow, and the sheep. Its milk is rich and nutritive: its flesh when young is excellent food, wholesome, and invigorating; and its hair, or fleece, which falls off

always in spring, is manufactured into fine stuffs, and almost every article necessary for clothing, bedding, and the covering of their tents. To comprehend the value of the camel, in those regions where perpetual drought and sterility reign, we must figure to ourselves a country without verdure and without water, where a clear sky and burning sun above, from which no friendly shade affords a shelter, parches every living creature with intolerable thirst, while an immense expanse of scorched sands beneath presents to the eye a dreary scene of barren uniformity, in which no object reminds the traveller of the existence of animated nature. Such are those immense deserts, which the camel and the dromedary alone can traverse. It is, therefore, no wonder, that the Arab regards the camel as an inestimable present from Heaven, a sacred animal, without the aid of which he could not subsist in those frightful deserts, which secure his independence, and surround him with an impregnable rampart.

In Turkey, Arabia, Persia, and Egypt, their whole commerce is carried on by means of those useful animals. The camel, in these countries, furnishes the most expeditious and the cheapest mode of conveyance. Merchants and travellers form themselves into numerous bodies, called caravans, in order to be able to protect themselves from the assaults of the formidable banditti which infest the borders of the desert. The usual rate of travelling in these caravans, is about twelve or fifteen miles per day, each camel carrying about four hundred weight, although the very large and strong ones can carry above twice as much. They are unloaded every night, and suffered to feed at liberty. If they are in a part of the country where there is pasture, they eat enough in one hour to serve them twenty-four; but in those journeys they seldom find any pasturage, and happily, delicate food is not necessary to them. Thistles, nettles, furze, and all those coarser vegetables, which other animals reject, furnish to the camel a dainty repast.

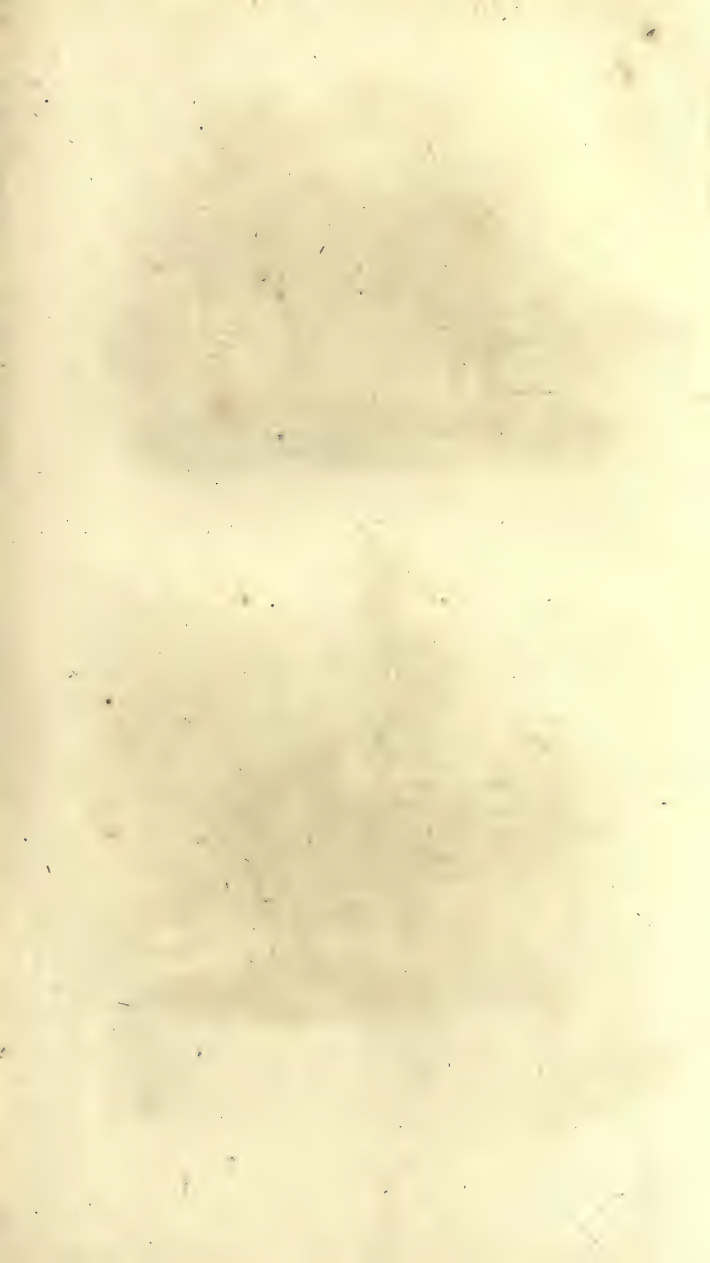
Although the ordinary rate of travelling on those



Kudu Antelope.



Giraffe.







Camel.



Buffalo.

Commercial journeys, in which the route is frequently of seven or eight hundred miles, be no quicker than it is here described, their predatory expeditions are differently conducted. The camel, as well as his master, is trained to these scenes of desultory warfare, and by every art innured to hunger, thirst, and fatigue. The plundering Arab will, in one day, if pursued, pass over a tract of desert of fifty miles. In this manner he will travel in those dreary solitudes; and during all that time of excessive fatigue, the camels are never unloaded; only a single hour of repose, and a ball of paste, for food, is allowed them each day. In this manner they often journey eight or nine days without meeting with any water, and during all this long space of time they can travel without drinking, while they carry water mostly in leather bags for the use of their masters. It is hence evident, that all the armies in the world would be inadequate to the pursuit of a troop of Arabs, and would infallibly perish should they persist in such an attempt.

It is somewhat extraordinary, that the camels, when they arrive in the vicinity of a spring, or pool of water, discover it by its smell at the distance of more than a mile. Thirst then excites them to redouble their pace, and when arrived, they drink as much as serves them during the rest of their journey, even should it continue some weeks, which is not unfrequently the case.

Of all the quadrupeds, with which the earth is replenished, the camel is the most tame and submissive: he kneels down to be loaded and unloaded, and when over-burdened, it makes the most piteous complaints, without ever offering the least resistance to his oppressor. If, however, his patience be extraordinary, it is much to be feared that, under the hand of relentless man, his sufferings are sometimes extreme.

Camels have a considerable share of intelligence; and the Arabs assert, that they are so extremely sensible of injustice and ill-treatment, that when this is carried too far, the inflictor will not find it easy to

escape their vengeance, and that they will retain the remembrance of an injury till an opportunity offers for gratifying their revenge. Eager, however, to express their resentment, they no longer retain any rancour, when once they are satisfied ; and it is even sufficient for them to *believe* they have satisfied their vengeance. When an Arab, therefore, has excited the rage of a camel, he throws down his garments in some place near which the animal is to pass, and disposes them in such a manner that they appear to cover a man sleeping under them. The animal recognizes the cloaths, seizes them in his teeth, shakes them with violence, and tramples on them in a rage. When his anger is appeased, he leaves them, and then the owner of the garments may make his appearance without any fear, load, and guide him as he pleases. "I have sometimes seen them," says M. Sonini, "weary of the impatience of their riders, stop short, turn round their long necks to bite them, and utter cries of rage. In these circumstances, the man must be careful not to alight, as he would infallibly be torn to pieces : he must also refrain from striking his beast, as that would but increase his fury. Nothing can be done, but to have patience, and appease the animal by patting him with the hand, (which frequently requires some time) when he will resume his way and his pace of himself." Like the elephant, camels have their periodical fits of rage, and during these they sometimes have been known to take up a man in their teeth, throw him on the ground, and trample him under their feet.

If we view with a philosophic eye the singular conformation of the camel, scepticism itself can scarcely call in question the evident marks which it bears of a regular design, in an organization so wonderfully adapted to the purposes for which it is destined, and to the place which it is appointed to hold in the system of animated nature. Its feet are peculiarly adapted to the soil on which he is to tread. They are liable to be injured by travelling on stones, and he cannot well support himself on moist and slippery clays ;

but his broad hoofs are perfectly calculated for travelling on the dry and parched sands of Arabia. But the peculiar and distinguished characteristic of the camel is its faculty of abstaining from water longer than any other animal, a property so necessary in those immense deserts. For this, Nature has wonderfully provided, by a singular internal conformation ; for, besides the four stomachs, which he has in common with other ruminating animals, he is also furnished with a fifth bag, that serves as a reservoir for water, where it remains uncorrupted, and without mixing with the other aliments. When the camel is pressed with thirst, or has need of water to moisten his aliment, in chewing the cud, he draws up into the stomach, or even into the throat, a part of this reserve. Furnished with so capacious and so convenient a receptacle, he can take a prodigious quantity of water at once, and remain many days without drinking.

Among all the forms of animal life, which Nature in her immense variety exhibits, there is none that more conspicuously displays the justness of design, and perfect adaptation to the circumstances of its existence, and to the service of man, than the rein-deer and the camel ; without the former, life could not be supported among the snowy mountains and frozen bogs of Lapland, and without the latter, the sandy deserts of Arabia would be impassable. Few attempts have been made, to transplant the rein-deer into more temperate regions ; but of these few none have yet succeeded : frequent trials have been made, to introduce the camel into other countries, but without effect. Though a native of a warm climate, the camel is not found in the tropical regions : it cannot subsist and propagate, either in the suffocating heat of the torrid, or the milder air of the temperate zone. The rein-deer is confined to the hyperborean climates, and seems incapable of subsisting under a more genial sky. Both the one and the other appear evidently designed by Providence for the service and solace of man, in those countries where no other animals are qualified to supersede their utility.

THE DROMEDARY

Is not a different species, but only a distinct breed of the camel. They herd and propagate together, and the production, which is also prolific, is improved by various intermixtures, and generally esteemed of greater value than either of the original breeds. The dromedary is inferior in size and strength, but swifter in pace, and is beyond comparison more numerous, and more extensively diffused, than the camel; the latter being seldom found, except in Arabia and some parts of the Levant, while the former extends over very spacious regions, and is common in Egypt, and all the northern parts of Africa, as well as in Persia and some parts of Tartary and India. But the peculiarly distinguishing characteristic of the two races is, that the dromedary has two hunches on the back, while the camel has only one: the former is also much swifter than the latter, and will carry a man an hundred miles a day, for nine or ten days together, through uninhabitable deserts of parched sand, requiring neither whip nor spur to quicken its pace. Both the dromedary and the camel are extremely sensible of good treatment, and in pursuing their fatiguing journies are much enlivened by singing, or the sound of the pipe. Not many of the females are put to labour, but are generally kept for the purpose of breeding. They usually produce one at a birth: the time of gestation, of both the camel and the dromedary, is twelve months: the period of its attainment to full strength and perfection is the age of six years, and the duration of its life is reckoned to be from forty to fifty years.

As the dromedary is only a variety of the camel, the same reflections on the gracious dispensation of an All-wise Providence must again occur, in contemplating the varied bounties of the Creator, in forming two different tribes of this excellent quadruped, and assigning to one a more confined, and to the other a more extensive sphere of utility.

I shall in the next place, call your attention to a quadruped, which, from the similarity of its qualities

to those of the species just offered to your contemplation, has obtained the appellation of the *camel of the new world*; and in regard to its utility, making allowances for its inferiority in size and strength, is little less valuable than that of the old continent.

THE LAMA,

Of Peru and Chili, resembles in its shape the Arabian camel, but is destitute of the dorsal hunch; its height is from three to four feet: its neck is long, its head small, and its colour white, black, or russet, or a mixture of all these dispersed in spots. The female produces only one at a birth. The duration of the life of this animal is about twelve years, and its disposition is gentle, patient, and tractable.

The lama was the only beast of burden which America originally produced; and notwithstanding the introduction of mules, is still used for the conveyance of merchandise. Bolívar says, that, in his time, three hundred thousand of these animals were employed in carrying the silver ore, dug out of the mines of Potosi, over the rugged hills and narrow paths of the Andes. They are exceedingly sure-footed, and with a load of about an hundred weight will climb the most craggy rocks, and descend the steepest precipices. In their journeys they will sometimes walk four or five days successively, before they seem desirous of repose; and they then rest spontaneously twenty or thirty hours, before they resume their toil. Sometimes, when they are inclined to rest a few minutes only, they bend their knees, and lower their bodies with great care, to prevent their load from falling off, or being deranged: when, however, they hear their conductor's whistle, they rise with equal precaution, and proceed on their journey. In going along in the day, they browse wherever they find herbage, and generally spend the night in chewing the cud.

THE PACOS

Is a native of the same countries as the lama, and seems to be only a variety of the same species, although a much smaller breed. Its body is covered with very fine long wool, of a dull purple colour, re-

sembling dried roses, which constitutes a valuable article of commerce, and is manufactured into gloves, stockings, carpets, &c. The pacos associate in numerous herds upon the most elevated parts of the Andes, where they are almost inaccessible, and endure the utmost severity of those frozen regions. The manner of taking them by the natives is singular. They tie cords, with small pieces of cloth or wool hanging loosely from them, across the narrow passes of the mountains, about three feet from the ground. They then drive a herd of these animals towards them, and they are so terrified by the fluttering of the rags, which they dare not pass, that they crowd together in great numbers, and are taken without difficulty.

The pacos, like the lama, is domesticated, and sometimes used for carrying burdens; but it cannot bear more than sixty or seventy pounds, and is less tractable and patient than the lama.

The great advantages derived from the wool of these animals, induced the Spaniards to attempt their introduction into Europe. Some of them were brought into Spain; but through mismanagement, or some other cause, the experiment did not succeed.

I shall, for the present, conclude with assuring you, that, most affectionately,

I remain, dear Sir

Your's, &c.

LETTER XXII.

"How instinct varies in the groveling swine,
Compar'd, half-reasoning elephant, with thine."

DEAR SIR,

I COME now to the description of a kind of quadruped which seem to occupy, in the scale of animated nature, a middle place, between the herbivorous and the carnivorous race, and unite in themselves most of those distinctions which are peculiar to these two grand divisions of the animal kingdom. The hog in all its varieties, although inferior in utility to the horse, the cow, and the sheep, neither rendering us

any service in the plough or the draught; affording us neither milk, butter, nor cheese; nor furnishing any warm and woolly fleece for our clothing, is, notwithstanding, highly estimable in supplying us with excellent food; and its value is not a little enhanced by the shortness of the time requisite for its growth and fattening.

The hog does not ruminate, but resembles the ruminating animals in dividing the hoof and preferring a vegetable diet; and it partakes of the nature of the carnivorous race in relishing animal food. In the length of the head, and in having only a single stomach, it exhibits a similarity to the horse: in its cloven-hoof we trace a resemblance to the cow; and it approximates to the claw-footed kind, by its appetite for flesh and its numerous progeny. Thus the species serves to fill up the chasm between carnivorous animals and those which feed upon herbage. This animal, producing from ten to twenty young at a birth, forms also a remarkable exception to the two general rules of nature; that the largest animals produce the fewest young, and that, of all quadrupeds, those which have claws are the most prolific.

THE COMMON HOG

Is so well known, that any description of it would be superfluous, and a few general observations are all that are requisite.

In no instance has Nature more conspicuously displayed her economy, than in forming this race of animals, and endowing them with an appetite to feed on a variety of things that would otherwise be wasted. The refuse of the kitchen, the barn, the garden, or the field, affords the swine a luxurious repast. It is restless in stormy weather, and seems particularly terrified or affected, when the wind is extremely violent. At such times it will often run screaming about, and appear much agitated.

In observing the disgusting appearance of this animal, its voracious appetite, and its dirty manner of feeding and living, it would scarcely be supposed that its flesh could have so excellent a flavour; and if a

man were wholly unacquainted with the nature of all quadrupeds, the hog would certainly be one of the last that he would select for his table.

Under this unpromising exterior, however, nature has concealed one of the most valuable articles of our food. The flesh of this animal is of general use, and of great importance to this country as a commercial nation. Linnæus says, that it is a wholesome food for those who use much exercise, but pernicious to such as lead a sedentary life.

The learned pigs which have frequently been exhibited in England, might suffice to prove that these animals are not destitute of sagacity; but the following instance, related by the Rev. Mr. Daniel, is too singular to be passed over in silence:---A gamekeeper of Sir Henry Mildmay broke a black sow to find game, and actually rendered her as staunch as any pointer. After Sir Henry's death this was sold by auction for a very considerable sum.

In the Island of Minorca hogs are frequently yoked with asses or young horses, in plowing the land; and in some parts of Italy they are used in hunting for truffles which grow some inches under the surface of the ground, but which are soon discovered by the acute scent of these creatures.

THE WILD BOAR

Is the original stock of our common swine; and the difference between them is only such as may readily be supposed between the wild and domesticated state. The wild is smaller than the tame boar; but his most distinguishing characteristics are his formidable tusks, which in some are almost a foot long, and exceedingly sharp: those of the under jaw are most to be dreaded, as with them he does the greatest mischief.

These animals when young, keep together along with the old ones; when attacked, the strongest face the danger, and form themselves into a ring, the weakest falling into the center; and in this position few beasts of prey dare venture to engage them.

- When the boar is arrived at a state of maturity, he

ranges the forest alone and fearless, dreading no single adversary. He offends no animal whatever, but is at the same time a terror to the fiercest of those that would offer him any injury.

The hunting of the wild boar, although exceedingly dangerous, constitutes one of the principal amusements of the great in those countries where he is to be found. But the dogs used for this sport should be of a slow, strong and heavy kind.

When the boar is roused, he moves forward at a slow pace, and but little afraid of his pursuers, often turns and waits until the dogs come up, and offers to attack them: the wary animals, however, fully sensible of the ferocity of the enemy with whom they have to contend, draw back and decline the engagement. The boar then again proceeds slowly, and the dogs renew the pursuit, which is thus continued with many intervals. At last, when the boar begins to be fatigued, the dogs rush in upon him from behind. Many of those which are young and inexperienced, lose their lives in the attack; but others that are older and well trained to the sport, hold him at bay until the hunters come up and kill him with their lances and spears.

In Europe the wild boar is much less common than formerly; and in a century or two, will probably be extinct: but there exists in the hottest parts of Africa a fierce and formidable race of these animals called the wood swine, which will attack a man on horseback if he venture to approach one of them; and first breaking the legs of the horse with his tusks, will quickly destroy both him and his rider.

THE PECCARY OF MEXICO

Is an animal very much resembling the hog; but as they will not breed together, it appears to be a distinct species.

These animals live chiefly in mountainous places, and feed on fruits and roots: they also eat serpents, lizards and toads, and are very dexterous in first taking off the skins with their fore feet and their teeth.

The whole body of this animal is covered with

strong bristles, which when he is irritated, rise erect like the bristles of an hedge hog.

These animals are exceedingly fierce. M. de la Borde relates that being once engaged in hunting a drove of peccaries, he and his party were surrounded by them and obliged to take refuge upon a fragment of a rock; and although they kept up a constant fire among them, the ferocious creatures did not retire until many of them were killed.

These kinds of quadrupeds already enumerated, and briefly described, are those which are chiefly useful to man in affording him their assistance, supplying him with food, and furnishing him with clothing. We shall now proceed to the inspection of a numerous race of different kinds, which seem created rather for themselves than for us; but which still contribute to show the diffusive goodness as well as the unlimited power of the Creator, in bestowing the blessing of existence on so great a variety of creatures, and so amply providing for their support.

I am, dear Sir,

Your's, &c.

LETTER XXIII.

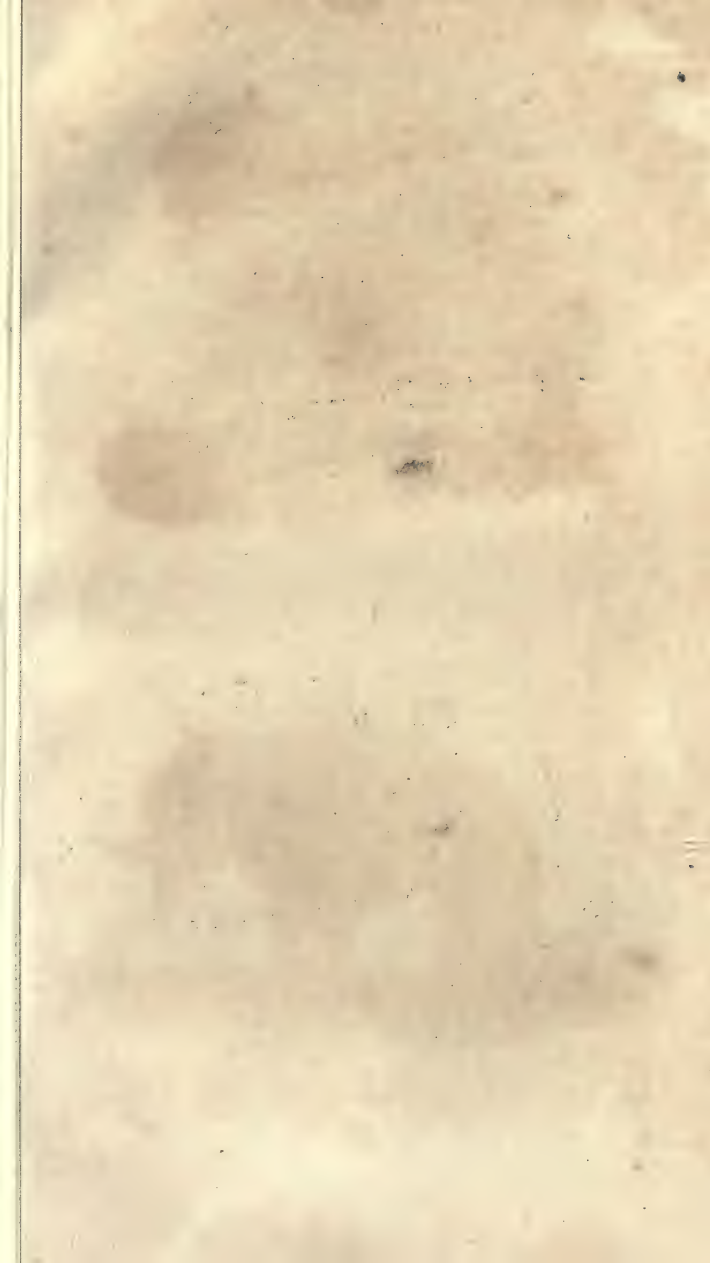
Peaceful beneath primeval trees, that cast
Their ample shade o'er Niger's yellow stream,
And when the Ganges rolls his sacred wave,
Or mid the central depth of black'ning woods,
High raised in solemn theatre around,
Leans the huge elephant; wisest of brutes,
O truly wise with gentle might endowed;
Though powerful not destructive!"

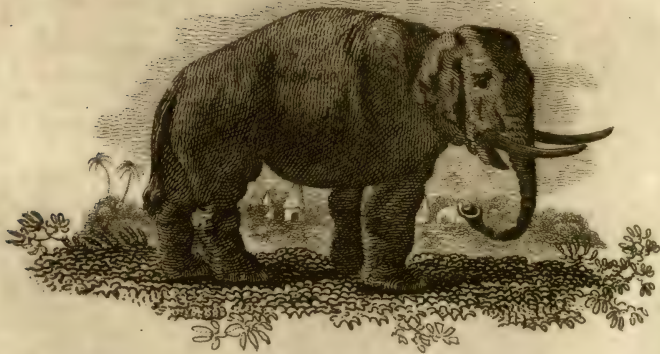
THOMSON.

DEAR SIR,

I FLATTER myself that I shall contribute to your rational amusement as well as to the increase of your knowledge, in exhibiting to your view one of the most wonderful objects of animated nature.

The wisdom and goodness of the great Creator are clearly visible in the formation of those creatures





which have already been offered to your consideration; but the same divine attributes are not less conspicuous in a number of others, and particularly in the ponderous and unweildy

ELEPHANT,

Which in size and strength surpasses all terrestrial animals, and in sagacity is inferior only to man; although some assert the superiority of the moose, but this opinion seems erroneous, or at least very doubtful. The human race excepted, the elephant indeed is the most respectable, as well as the most wonderful of creatures endowed with life and sensation.

This wonderful quadruped is a native of Asia and Africa, but is most numerous in the latter. In the extensive regions which lie between the river Senegal and the Cape of Good Hope, elephants abound more than in any other part of the world, and are also less fearful of man; for the savage inhabitants of those countries instead of attempting to subdue this powerful animal, and render him subservient to their necessities, seem only desirous of avoiding his anger. In the Countries near the Cape, elephants are seen in large herds consisting of many hundreds; and in the vast regions of Monomotapa, Monocmuci, and other parts of the interior of Africa, they are probably still more numerous.

A creature so extraordinary in its structure and qualities merits to be somewhat particularly described, although no description can convey an adequate idea of its magnitude, unless the animal itself has been presented to the view.

At the Cape the height of the elephant is from twelve to fifteen feet. His eyes are in proportion to his size, very small, but lively, brilliant, and full of expression: his ears are very large, long and pendulous; but he can raise them with great facility, and makes use of them as a fan to cool himself, and drive away the flies or insects. His hearing is remarkably fine: he delights in the sound of musical instruments, to which he is easily brought to move in cadence. His sense of smelling is equally delicate; for he is

highly delighted with the scent of odoriferous herbs. In each jaw he has four grinders, one of which sometimes measures nine inches in breadth, and weighs four pounds and a half. The texture of the skin is uneven and wrinkled, and full of deep fissures resembling the bark of an old tree. The colour is tawny, inclining to grey. The legs of this animal are massy columns of three or four feet in circumference, and five or six in height. Its feet are rounded at the bottom, divided into five toes covered with skin, so as not to be visible, and terminated in a nail or hoof of a horny substance. His body is remarkably round and bulky, and nearly destitute of hair.

The proboscis, or trunk, is the most singular and peculiar characteristic of this extraordinary quadruped; and of all the instruments which the superabundant wisdom and goodness of the Creator has bestowed on the various forms of animal life, this is perhaps the most complete and the most admirable. It is composed of nerves, membranes and sinews, and is the organ of smelling, feeding, and action, as the animal can bend, contract, lengthen and turn it in every direction.

This fleshy tube terminates in a protuberance, which stretches out on the upper side in the form of a finger, and possesses in a considerable degree the dexterity of that useful member of the human body. With this instrument the animal can lift from the ground the smallest piece of money, select herbs and flowers, untie knots, and grasp any thing so firmly that no force can tear it from his grasp.

At the end of this trunk are placed the nostrils through which he draws in water for the purpose of quenching his thirst, or of washing and cooling himself, which he performs by taking in a large quantity, and then spouting it out over his whole body, as if it issued from a fountain.

The extremes of cold and heat seem equally to affect these animals: to avoid the latter, they seek the thickest shade, or retire to large rivers in which they

bathe, and sometimes amuse themselves for several hours together with swimming.

Though the elephant is so wonderfully aided by his trunk in such a variety of operations, yet with respect to the rest of his conformation he is clumsy and unweildy; he goes forward, however, with ease and celerity, and in walking or running is equal in speed to the generality of horses; but he turns with difficulty, and not without taking a pretty large circuit. His neck is so short that he can scarcely turn his head, and must wheel round in order to survey an enemy in the rear; and his legs are so stiff as scarcely to bend when he is advanced in years, so that when that period arrives he is obliged to repose himself standing.

These quadrupeds subsist wholly on vegetables, and appear to have an antipathy against animal food. They associate in numerous herds, and when one of them happens to discover a plentiful pasture, he instantly gives a loud signal to the rest, as an invitation to partake of his luxurious fare. The meadows, however, must be equally fertile and extensive to furnish a numerous herd with a competent supply; and for that reason they often seek fresh pasturage, and do incredible damage whenever they stray into cultivated grounds, not only devouring vast quantities of food, but also destroying, by the enormous weight of their bodies, more than they eat.

The inhabitants of the countries where they abound, use every artifice to prevent the approach of these unwelcome visitants, making loud noises, and kindling large fires round their habitations: but, notwithstanding all their precautions, the elephants sometimes break in upon them, and destroy their harvest. It is very difficult to repel these formidable invasions; for the whole herd advances together, and whether they attack, march, or fly, they generally act in concert.

Although the elephant be indisputably the strongest as well as the largest of all quadrupeds, yet in its native woods and deserts it is neither formidable nor ferocious, but mild and peaceable in its disposition, equally fearless and inoffensive; and when tamed by

man, and tutored by his instructions, the noble animal submits to the most painful drudgery, and is so attentive to the commands of its master, that a word or a look is sufficient to stimulate him to extraordinary exertion.

Of all the animals that have been subjugated by the human race, the elephant is universally allowed to be the most tractable and obedient. When treated with kindness, he testifies his gratitude by fulfilling all the desires of his keeper, caresses him with affectionate fondness, receives his commands with attention, and executes them with punctuality and zeal. He bends the knee for the accommodation of those who wish to mount upon his back, suffers himself to be harnessed, and seems to delight in the finery of his trappings.

These animals are used in drawing chariots, wag-gons, and various sorts of machines, one elephant drawing as much as six horses, and are of great use in carrying great quantities of luggage across rivers. They can travel near a hundred miles a day, and fifty or sixty regularly, without any violent effort.

The elephant is as magnanimous as he is mild, and ever willing to exert his extraordinary strength. We are told that in India, where these creatures were once employed in launching ships, one of them was directed to force into the water a large vessel, which proving a task superior to his strength, the master said in an angry tone, "Take away that lazy beast and bring another." The poor elephant immediately redoubled its efforts, fractured its skull, and died on the spot.

The Indians have from time immemorial employed elephants in their wars: Porus, with eighty-five of them, opposed Alexander's passage over the Hydaspes. M. Buffon, with very great appearance of probability, supposes that it was some of the elephants taken by that monarch in his Indian expedition, and transported into Greece, that Pyrrhus afterwards brought against the Romans. Since the introduction of fire-arms, however, elephants have been of little

use in deciding the contests of men; for being terrified by the explosion of artillery, they are soon thrown into confusion, and, becoming ungovernable, often trample down those ranks which they were brought into the field to defend. They are now chiefly kept for the purposes of labour, or of magnificent parade. They are likewise made use of in the East as the executioners of criminals, a business which they perform with singular dexterity, breaking, at the word of command, the limbs of the condemned wretch with their trunks, or trampling him under their feet, and prolonging his sufferings or accelerating his death according to the directions of their keepers.

In Siam, Pegu, Tonquin, and Cochin China, elephants are still esteemed a valuable auxiliary in war, as well as an essential appendage to despotic magnificence and ostentatious parade; and the princes of those countries are attended on their tours by some hundreds of these enormous animals, for the purpose of conveying the ladies of the seraglio, as well as the immense quantities of baggage which those eastern sovereigns always carry along with them.

The manner of taking and taming animals of so prodigious a strength as might seem to set all human power at defiance, is so curious, that it merits a few moments of your attention.

In the midst of some forest abounding with elephants, a large piece of ground is marked out, and surrounded with strong palisades, interwoven with large branches of trees: one end of this inclosure is narrow, from which it opens gradually, so as to take in a considerable extent of country. On this occasion some thousands of men are employed, who place themselves in such a manner as to prevent the wild elephants from making their escape. They then kindle large fires, of which these animals are exceedingly afraid, and make, at the same time, a dreadful noise with drums and other discordant instruments, to increase their terror. Another party, consisting of some thousands, with the aid of tame female elephants trained for the purpose, drive the wild ones slowly to-

wards the entrance of the inclosure, the whole train of hunters closing in after them, shouting and making loud noises till they are driven by insensible degrees into the narrow part, through which there is an opening into a smaller space, strongly fenced in and guarded on all sides. As soon as one of the wild elephants enters this narrow passage, a strong bar closes it from behind, and he finds himself completely environed.

On the top of this passage, some of the huntsmen stand with goads in their hands, urging the animal forward to the end of the passage, where there is just room enough for him to go through. He is then received into the custody of two tame elephants, which stand one on each side of them, and press him into the service: if he be likely to prove refractory, they begin to beat him with their trunks, till he is reduced to obedience, and suffers himself to be led to a tree, where he is bound by the leg with stout thongs made of untanned elk-skin. The tame elephants are then led back to the inclosure; and other wild ones are brought to submission in the same manner.

They are all suffered to remain fast to the trees for several days. Attendants are placed by the side of each elephant, thus caught and confined, who supply him by little and little with food, till he is gradually brought to be sensible of kindness, and caresses. In the space of fourteen days his subjugation is completed. He then becomes attached to his keeper, and quietly resigns his prodigious strength to the service of man.

It is a singular circumstance in the history of this extraordinary quadruped, that in a state of subjection it is invariably barren; and though it has for ages been reduced under the dominion of man, it has never been known to breed; it consequently follows that of the vast quantities of elephants tamed and trained to human purposes, there is not one that has not been originally wild: this would seem to indicate that it is not one of the creatures which nature primarily designed for the service of man. It is, however,

certain, that it is in an eminent degree capable of a secondary application to his purposes. The immense quantity of forage which it requires, plainly shews that it is not an animal of general use in a domestic state; and even in the countries where they most abound, and are most used, they are seldom kept except by the great and opulent. As they do not propagate in a domestic state, the Eastern princes are obliged to send every year into the forests to procure fresh supplies, to make up the deficiencies of number unavoidably occasioned by age, disease, or accident. They are frequently hunted by the Dutch colonists at the Cape of Good Hope, who make great advantage of their teeth. The largest teeth weigh a hundred and fifty Dutch pounds, and are sold for as many guilders; so that an expert shooter may at one shot earn three hundred guilders. It is not therefore, to be wondered at, that a traffic so lucrative should tempt them to run great risks.

In approaching this animal great care must be taken; for if the elephant discover his enemy, he rushes out upon him.

One of these hunters being on a plain under the shelter of a few scattered trees, thought he should be able to approach near enough to shoot at an elephant that was at a little distance from him. The animal, however, discovered, pursued, and overtook him, and, laying hold of him with his trunk, instantly beat him to death. The elephant, however, although thus terrible when provoked, never attacks any but those who have given him offence, or are preparing for his destruction.

Although elephants are more numerous in Africa, those of India are generally superior in strength, as well as size, and those of Ceylon in particular surpass all others in courage and sagacity. In those oriental countries some of them are milk white, and valued at an exorbitant price, as constituting one of the most pompous appendages of eastern magnificence.

As the elephant never propagates in a domestic state, the precise time of its gestation is but imper-

fectly known. Aristotle, however, assigns two years to this period. This extraordinary quadruped is thirty years in arriving at its full growth, and lives even in a state of captivity a hundred and twenty years: in a state of natural freedom the duration of its life is supposed to be much farther extended.

In regard to the elephant's discernment and sagacity, stories have been related that might seem incredible, and of which some are undoubtedly fictitious. Of such, however, as are so well authenticated as not to admit of a possibility of doubt, we have a sufficient number to shew its superiority over the rest of the brute creation. Some of the actions of this surprising animal might indeed almost seem to be the effects of a portion of intellect rather than of mere instinct.

Among several anecdotes communicated by the Marquis de Montmirail, we find that the cornac, or conductor of an elephant, had excited the animal to make an extraordinary effort, by shewing him a vessel of arrack, which he pointed out as his reward; but when he had performed his arduous task, the elephant had the mortification of seeing himself disappointed of his expected recompence; and, impatient of being thus mocked, immediately killed his governor.

The man's wife, who was a spectator of this dreadful catastrophe, in a fit of agonizing grief, took her two little infants and threw them at the feet of the enraged animal, saying, "Since you have destroyed my husband, kill me also and my children." The elephant immediately stopped, and, as if stung with remorse, took up the eldest boy with his trunk, placed him on his neck, and would never afterwards obey any other governor. It is here to be observed, that the elephant is extremely fond of spirituous liquors, as well as of wine, and the sight of a vessel filled with these liquors, and promised as a reward, will induce him to make the most extraordinary exertions and perform the most painful tasks; and to disappoint him is dangerous, and his revenge is almost certain. But if he be vindictive, he is equally grateful, and will suffer no kindness shewn him to go unrewarded:

A soldier of Pondicherry, who frequently carried one of these creatures a certain measure of arrack, being one day a little intoxicated, and seeing himself pursued by the guard who were about to conduct him to prison, took refuge under the elephant, where he fell sound asleep. The guard attempted in vain to take him from his asylum: the elephant defended him with his trunk. The next day the soldier becoming sober, was terrified at seeing himself placed under so enormous an animal; but the elephant caressed him with his trunk to remove his fears, and make him understand that he might depart in safety.

The elephant is sometimes seized with a sort of phrenzy, which renders him extremely formidable, so that on the first symptoms of madness he is commonly killed, in order to prevent mischief: yet in those fits he has frequently been known to distinguish his benefactors; so strongly are gratitude and magnanimity impressed on his nature.

The elephant that was kept in the menagerie at Versailles, always discerned when any person designed to make a fool of him, and always remembered an affront, which he never failed to revenge at the first opportunity. Having been cheated by a man who feigned to throw something into his mouth, he struck him with his trunk and broke two of his ribs, and afterwards trampled him under his feet and broke one of his legs. A painter being desirous of drawing him in the attitude of having his trunk erect and his mouth open, ordered his servant to make him retain that posture, by constantly throwing him fruit; the servant, however, at last deceived him, which so roused his indignation, that, perceiving the original cause of this deception to be the painter's desire of drawing him, he revenged himself by throwing, with his trunk, a large quantity of water on the paper, which completely spoiled the design.

The elephants exhibited in Europe are commonly of a diminutive size, as the coldness of the climate both checks the growth and abridges the life of these animals. That which has just been mentioned, and

which was sent by the king of Portugal to Louis XIV. A. D. 1668, died in 1681, being four years old at his arrival, and living only thirteen years in the menagerie at Versailles. He was six feet and a half high at four years old, and advanced in growth only one foot during the thirteen years that he lived in France, although he was treated with care, and fed with profusion. He had every day four pounds of bread, twelve pints of wine, two buckets of porridge with four or five pounds of steeped bread and two buckets of rice boiled in water.

The elephant that died in 1803 at Exeter 'Change, was brought over in the Rose East-Indiaman, and purchased by the owner of the menagerie for 1000*l*. He was generally fed with hay and straw, but could also eat with avidity, carrots, cabbages, bread, and boiled potatoes. He was so excessively fond of beer, that he has been known to drink upwards of fifty quarts in a day, given by his numerous visitors. He was also allowed nine pails of water daily, given at three different times: but the quantity he ate could not be precisely ascertained, as he frequently scattered great part of the straw which was given him for food, and ate a considerable portion of that which formed his litter. This animal would kneel down, bow to the company, or search the pockets of his keeper, at the word of command.

I presume, my dear Sir, you will excuse my prolixity in the description of the elephant, when you consider that it is, if not the most useful, at least the most wonderful of all God's works displayed in the animal creation, being a monster of matter and a miracle of intelligence. He unites in himself the judgment of the beaver, the dexterity of the monkey, and the sentiment of the dog; and adds to all these qualifications the peculiar advantages of extraordinary size, strength and longevity. He can conquer the lion and the tiger, nor dare any beast of prey attack him. When we consider that he can root up trees with his trunk; that in war he carries on his back a tower containing five or six combatants; that he





moves machines and carries burthens to which the strength of six horses is scarcely adequate; and that to this amazing force he joins courage, prudence, magnanimity and gratitude for kind treatment, we cannot hesitate to give him the first place in the scale of animal beings; nor can we wonder that the ancients considered the elephant as a prodigy, a miracle of nature; and that men have in all ages set a high value on this greatest of quadrupeds,

Flattering myself therefore that this epistle, although long, will not appear tedious, I shall at last conclude with assuring you,

I am most respectfully, dear Sir,

Your's, &c.

LETTER XXIV.

“Canst thou bind the unicorn with his band in the furrow?
Or will he harrow the valleys after thee?”

BOOK OF JOB.

DEAR SIR,

HAVING in my last entertained you with an account of the elephant, I shall now be happy to add to your amusement as well as information, by giving you some knowledge of a quadruped which is indeed inferior to it in size, but in strength is surpassed by no other animal.

THE RHINOCEROS

Is a native of the same countries, and inhabits the same forests and deserts as the elephant. The length of this animal from the muzzle to the insertion of the tail, is generally about twelve feet, and the circumference of its body nearly equal to the length. The form of the head resembles that of a hog, except that the ears are larger and stand erect. Its nose is armed with a formidable weapon peculiar to this animal, being an exceeding hard and solid horn, which sometimes grows almost four feet in length, and renders it a complete match for the fiercest adversary. Like

the elephant, it is formidable to ferocious animals, but perfectly inoffensive to those that offer it no injury and give no provocation.

The body and limbs of this animal are covered with a skin so hard and impenetrable, that it will turn the edge of the sharpest scymetar, and (except on the belly) will resist the force of a musket-ball. This skin, which is of a blackish colour, forms itself into divers folds by which the motions of the animal are facilitated.

The body, thighs, legs, and feet, are every where covered with tuberosities, or knots, which some writers have denominated scales; but they are mere indurations of the skin, which in the creases between the folds is not only penetrable, but quite soft and of a light flesh-colour. The belly of this animal is large, and its legs short, massy, and strong: its upper lip is long, capable of great extension, and, like the proboscis of the elephant, serves to lay hold of any thing that it would convey to its mouth.

The strength of the rhinoceros is the most conspicuous advantage conferred on it by nature. It seems rather to partake of the stupidity of the hog, than of the sagacity of the elephant, and, without being ferocious, or even carnivorous, is totally untractable. It is a solitary animal, loves moist and marshy grounds, especially near the banks of rivers; and, like the hog, delights to wallow in the mire. It seems to be subject to sudden paroxysms of madness, which are sometimes attended with fatal effects. A rhinoceros, which Emanuel, king of Portugal, sent as a present to the Pope A. D. 1513, destroyed the vessel in which it was embarked; and some years ago another which had been exhibited at Paris, was drowned in a similar manner in its passage to Italy.

The food of the rhinoceros is wholly of the vegetable kind: it seems to prefer the grossest herbs to the most delicate pasturage; but yet it is very fond of the sugar-cane, and of all kinds of grain. The hearing of the animal is very acute, and it listens with attention to any kind of noise; but from the peculiar construc-

tion of its eyes, its sight is defective, and can be directed only to objects immediately before it. The acuteness of its hearing, and impenetrability of its skin, oblige the hunters to follow it at a distance and watch it until it lies down to sleep, when they approach with great precaution, and discharge their muskets all at once into the lower parts of its belly.

A fœtus of this animal, which had been extracted from the mother, was sent from Java, and deposited in the royal cabinet of Paris; and the memorial which accompanied this present stated, that twenty-eight hunters had assembled to attack the female rhinoceros, and followed her at a distance for some days, observing carefully to reconnoitre her progress; and that having by these means surprised her when asleep, they approached so near as to discharge at one volley the contents of the twenty-eight muskets into the vulnerable part of her belly.

Without being useful like the elephant, the rhinoceros is extremely hurtful, by the devastation that he makes whenever he enters any cultivated grounds. His consumption of victuals is exceedingly great.

In the year 1743, Dr. Parsons published a minute description of one of these animals that was brought from Bengal into England. Though only two years old, the expence of his food and voyage amounted to near 1000*l.* sterling. He consumed every day, at three meals, seven pounds of rice mixed with three pounds of sugar, besides a large quantity of hay and green plants: he likewise drank a great deal of water. In his disposition he was perfectly gentle, and would suffer any part of his body to be touched, without evincing the least displeasure; but when hungry, or struck by any person, he became fierce and mischievous, and an immediate supply of food was the only mean of pacifying him.

A rhinoceros brought from Akham, and exhibited at Paris in 1748, is said to have been extremely tame, and even caressing. He was fed chiefly on hay and corn, but the attendants frequently gave him thorny branches of trees and sharp and prickly plants, with

which he appeared much delighted, though they sometimes drew blood from his mouth and tongue.

The only two animals of this species that have been brought into England for a considerable number of years, were both purchased for the menagerie, Exeter 'Change. The first, of which the skin is still preserved, came from the East Indies; arrived in England in the year 1790, when he was about five years old: and was soon afterward purchased by Mr. Piddcock, for seven hundred pounds.

His docility was equal to that of a tolerably tractable pig: he would obey his master's orders, walk about the room to exhibit himself, and even allow his visitants to pat him on the back or side. His voice bore some resemblance to the bleating of a calf, and was most commonly excited when he perceived any person with fruit, or other favourite food in their hands.

His food was invariably seized in his projecting upper lip, and by it conveyed to his mouth. He usually ate twenty-eight pounds of clover, the same weight of ship-biscuit, and a prodigious quantity of greens every day. He was likewise allowed five pails of water twice or three times a day; this was put into a vessel containing about three pails, which was filled up as he drank it, and he never ended his draught till the water was exhausted. He was also extremely fond of sweet wines, of which he would sometimes drink three or four bottles in the course of a few hours.

In the month of October, 1792, as this animal was one day rising up suddenly, he dislocated the joint of one of his fore legs, and this accident brought on an inflammation, which occasioned his death about nine months afterwards. He died in a caravan near Portsmouth, and the stench arising from his body was so intolerable, that the Mayor ordered it to be immediately buried. However, about a fortnight afterwards, it was privately dug up during the night, for the purpose of preserving its skin, and some of the most valuable of the bones, though the stench was so power-

ful, that the persons employed found the greatest difficulty in performing their operations.

The other rhinoceros exhibited at Exeter 'Change, was considerably smaller than the former. It was brought over in the year 1799, and was purchased by an agent of the Emperor of Germany, for 1000*l.* but it died in a stable-yard, in Drury-lane, about twelve months after its arrival in this country, and two months after it was sold by Mr. Pidcock. This animal is supposed to be the unicorn of the ancients. It was known to the Romans at an early period, and Augustus caused one to be exhibited in his triumph over Cleopatra.

The flesh of the rhinoceros is esteemed excellent by Indians and Negroes. Kolben says, that he has often eaten it with pleasure; but the skin is the most valuable part, as it makes the hardest and best leather of any in the world. In the countries where the rhinoceros is found, its horn, and indeed almost every part of its body, is esteemed an antidote against poison, as well as a remedy against various diseases. These virtues, however, are doubtless no more than imaginary. The period of this animal's life is supposed to be about eighty years; but this, and its time of gestation are equally uncertain.

The double-horned rhinoceros is extremely rare, and its existence was long considered as fabulous, or at least, doubtful, until it was discovered at the Cape of Good Hope, by Dr. Sparrman, who has published a most exact anatomical account of this before-undescribed animal, which, however, does not appear materially to differ from that of which I have just given a description, except in the circumstance of having two horns, and in the appearance of its skin, which, instead of being covered with armour like folds, has merely a slight wrinkle across the shoulders, and on the hinder parts.

Mr. Bruce's account of the manners of the two-horned rhinoceros, is particularly worthy your attention. He observes, that "besides the trees capable of most resistance, there are in the vast forests within

the rains, trees of softer consistence, and of a very succulent quality, which seem to be destined for the principal food of this animal. For the purpose of gaining the highest branches of these, his upper lip is capable of being lengthened out, so as to increase his power of laying hold with it, in the same manner, as the elephant does with his trunk. With this lip, and the assistance of his tongue, he pulls down the upper branches, which have most leaves, and these he devours first. Having stripped the tree of its branches, he does not immediately abandon it; but, placing his snout as low in the trunks as he finds his horns will enter, he rips up the body of the tree, and reduces it to thin pieces, like so many laths; and when he has thus prepared it, he embraces as much of it as he can in his monstrous jaws, and twists it round with as much ease as an ox would do a root of cellery, or any small plant.

“When pursued and in fear he possesses an astonishing degree of swiftness, considering the unwieldiness of his body, his great weight before, and the shortness of his legs. It is not true, that in a plain, he beats the horse in swiftness; for though a horse can very seldom come up, this is merely owing to his cunning. He makes constantly from wood to wood, and forces himself into the thickest parts of them; the trees that are dead or dry, are broken down as with a cannon shot, and fall behind him and on his side, in all directions; others that are more pliable, or fuller of sap, are bent back by his weight and the velocity of his motions; and after he has passed, restoring themselves, like a green branch, to their natural position, they often sweep the incautious pursuer and his horse from the ground, and dash them in pieces against the surrounding trees.”

In my next I shall endeavour to amuse you with some new curiosity in nature, and in the mean time, beg leave to assure you, that

I am, with unfeigned affection, dear Sir,

Your's, &c.

LETTER XXV.

"The flood disparts: behold! in plaited mail,
Behemoth rears his head. Glanc'd from his side,
The darted steel in idle shivers flies:
He fearless walks the plain, or seeks the hills;
Where, as he crops his varied fare, the herds,
In widening circles round, forget their food,
And at the harmless stranger wondering gaze."

DEAR SIR,

FOR the subject of our correspondence I have chosen another of the wonderful works of the Creator, more rare than the rhinoceros, and equally worthy of attention. The peculiar habits and disposition of the animal I am about to describe, concur with the remoteness of those solitudes which afford it an asylum in throwing difficulties in the way of its investigation.

THE HIPPOPOTAMUS

Inhabits all the large rivers of Africa, from the Niger to the Cape of Good Hope, but is not found in any of those which fall into the Mediterranean, except the Nile, and exists in that part of it only which runs through Upper Egypt, and the fens and lakes of Abyssinia and Nubia.

This amphibious animal has been celebrated from the remotest antiquity, and is mentioned in the book of Job under the name of Behemoth; but although its figure is found engraven on Egyptian obelisks and Roman medals, it was imperfectly known to ancient naturalists. Pliny, instead of correcting, has copied, and even multiplied the errors of Aristotle, and the example has been imitated by succeeding writers.

As the hippopotamus mostly resides at the bottom of great rivers, it is not easy to ascertain its size. M. Vaillant informs us that one which he shot measured from the muzzle to the insertion of the tail ten feet seven inches, and eight feet in circumference, but from the smallness of its tusks be supposed it to be a

young one. Dr. Goldsmith says, that an Italian surgeon having procured one from the Nile, found it to measure seventeen feet in length, and sixteen round the body. Its height did not exceed seven feet, and the jaws when extended were two feet wide. Ray says, that its upper jaw is moveable like that of the crocodile. In each jaw is four cutting teeth; it has also four large tusks: those of the under jaw, which are the largest, are sometimes above two feet long. The canine teeth are said to be so hard as to emit fire, when struck with steel: they are extremely white, and for the purpose of making artificial teeth are preferred to ivory. The grinders are square or oblong, and weigh sometimes more than three pounds. The skin is of a dusky colour, and although less callous, is thicker than that of the rhinoceros, and is manufactured into whips. The tail is about a foot long, taper, and flatted at the end, which is thinly planted with bristly hairs. The legs are so short that its belly almost touches the ground, and the hoofs are divided into four parts unconnected by membranes. Some writers represent the figure of this animal as an intermediate form between the ox and the hog. The hippopotamus, although little inferior in size to the elephant, and of a figure calculated to inspire terror, is formidable in appearance rather than in reality. Its disposition is mild and gentle, except when provoked or wounded. When this happens in the water, where its activity is equal to its courage, it will rise and attack boats or canoes in the most furious and fearless manner. Dampier, says, that he has known one of these animals sink a boat full of people, by tearing a hole in the bottom with its tusks. On the land, its movements are heavy; and the method of taking it is by digging pits in those parts through which it passes in its way to the river, when it returns from feeding.

These animals seldom go far from the rivers, unless their banks fail of affording them a sufficiency of food. In that case, they sometimes stray into cultivated ground, where, like the rhinoceros and the elephant,

they make dreadful havoc, as they not only devour an immense quantity of vegetable produce, but destroy still more by their feet, which support so enormous a ponderosity of body.

Professor Thunberg was informed by a respectable person at the Cape of Good Hope, that as he and a party were on a hunting expedition, they perceived a female hippopotamus come out of one of the rivers, and retire to a little distance, in order to calve. They concealed themselves among some bushes till the calf and its mother made their appearance, when one of them fired and shot the latter dead on the spot. The Hottentots, supposing they might now seize the calf alive, immediately ran from their hiding-place; but the young animal, though only just brought into the world, eluded their pursuit, and plunged safely into the river. This the professor justly observes, was a singular instance of pure instinct, for the creature unhesitatingly ran to the river, as its proper place of security, without having received any previous instruction from the actions of its parent.

It is said that these creatures are capable of being tamed; and Belon asserts that he has seen one so gentle as to be let out of a stable, and led by its keeper, without attempting to injure any one.

The flesh of the hippopotamus is tender and well tasted, and by the colonists of the Cape settlement esteemed exceedingly wholesome. The gelatinous part of the feet and the tongue, when dried, are considered as great delicacies.

Thus, my dear Sir, you see that these sequestered animals, although inhabiting the solitary recesses of the largest rivers in the most unfrequented parts of the globe, are not devoid of utility to man.

Thus far I have been occupied in performing a task equally delightful to myself, and conducive to your instruction and amusement. In surveying those numerous tribes of animals, of which some are so perfectly adapted to afford us their assistance in labour, or to supply us with food and clothing; and others so admirably calculated to gratify our curiosity and ex-

cite rational beings to contemplate the greatness and goodness of the Author of Nature, who has created so many subordinate beings endowed with qualities so essential to our comfortable existence, that we cannot but learn the divine lesson of gratitude to the bountiful giver of all good things. With a little reflection, your own good sense, my dear Sir, will enable you to perceive, that to treat with kindness the creatures, subject to our domination and committed to our charge, is the most rational and appropriate demonstration of our gratitude to the Creator of the universe, and common parent of all, for his kind attention to our comforts and conveniences.

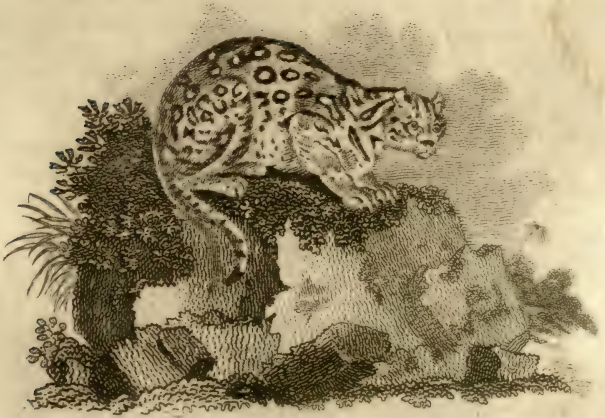
After exhibiting to your view the nature, the habits, and utility of these different kinds of animals, which, being domesticated among us, and necessary to our service and support, induce us to consider their welfare as connected with our own, I have, my dear Sir, led you to range among the wilder inhabitants of the forests, the mountains, and the deserts, which, although less dependent on man, are frequently the objects of his pursuit and become subservient to his interest. Having followed Nature to her most retired recesses, and seen and admired the works of the Creator displayed in a variety of the most useful, the most beautiful, and the most inoffensive animal forms, you will now be engaged in a different pursuit, and occupied with the contemplation of a new scene.

I shall leave you a few moments to enjoy the expectation of those new pleasures which you will assuredly derive from a farther review of animated nature; and conclude, by repeating that with unfeigned affection,

I am, dear Sir,

Your's, &c.





LETTER XXVI.

Around in sympathetic mirth
 Its tricks the kitten tries.

GOLDSMITH.

DEAR SIR,

I RESUME the pen to fulfil my promise of affording you new pleasure in exhibiting to your view a novel and curious scene; and must call your attention to a numerous, ferocious, and sanguinary tribe, engaged in unceasing hostilities against man, and against all those animals that are in alliance with him, and under his dominion and protection. This numerous and ferocious race, which by most naturalists is denominated

THE CAT KIND,

is distinguished by their formidable claws, which are capable of being drawn in, or extended at pleasure. They lead a solitary life, prowling about for prey, and, instead of uniting in herds like the herbivorous kinds, they ramble about alone in search of food, and are generally enemies to one another. Although greatly differing in size and in colour, they all correspond in form and indisposition: they are equally fierce and rapacious, and all of them carnivorous; the common cat, through habits of domestication, is brought to eat farinaceous food, but never prefers it; and all other animals of the cat kind refuse the aliment that is not tinged with blood.

I shall, my dear Sir, begin my description of this race with this common domestic animal the cat, the only one of the tribe that has been taken under human protection.

THE CAT,

is, when young, of all animals the most sportive and playful, but as its years increase, it begins to grow more serious, and also more artful.

Any description of an animal so universally known,

and of which the habits and propensities are exposed to daily observation, would be superfluous: we may, however, observe, that although cats cannot absolutely see in the dark, as is often asserted, yet they see much better in the twilight, or when it is dusky, than in the broad day-light. During the day the pupil of this animal's eye is contracted, but in the dusk it resumes its natural roundness. It then enjoys perfect vision, and takes advantage of it to discover and seize its prey.

The nocturnal meetings of these creatures seem a curious peculiarity. They call one another together by loud cries, and sometimes meet in great numbers. When they are met, they look at one another in a menacing manner, writhe themselves in a thousand threatening postures, and, without any apparent cause, fly upon one another with the most furious rage, with teeth and claws indiscriminately wounding and lacerating one another.

These furious engagements never happen but in the night: they sometimes continue several hours, and the most horrid squalls accompany them through the whole time of their duration.

The cat is fond of certain perfumes, and is particularly attracted by the smell of valerian: it has a remarkable aversion to mire and water, and is a handsome, cleanly and agreeable creature.

The perseverance of the cat in watching its prey is remarkable, and indeed extraordinary. This animal loves to bask in the sun-shine, and is exceedingly fond of sitting by a warm fire, so that from these circumstances one might naturally suppose it to be unable to bear the cold; and yet, in watching its prey, it will frequently sit motionless several hours together among snow in the severest weather.

Some naturalists have treated the cat somewhat hardly in their descriptions, and have represented it as insensible of kindness, and incapable of attachment, which is certainly a mistake. It is as much attached to its master as any other animal, except the dog, and expresses its affections by the most engaging

caresses, and the most agreeable purring. It is also reproached with treachery and cruelty, but are not the artifices which it uses the particular instincts which the all-wise Creator has given it in conformity with the purposes for which it is designed? Being destined to prey upon so lively and active an animal as the mouse, which possesses so many means of escape, it is requisite that it should be artful; and, indeed, the cat, when well observed, exhibits the most evident proofs of a particular adaptation to a particular purpose, and the most striking example of a peculiar instinct suited to its destination.

A celebrated writer says, that "the cat is one of those animals which has made the least return to man for his trouble by its services;" but it is certain that it renders very essential services to man, and merits well his kindness and protection. Authors seem to delight in exaggerating the good qualities of the dog, while they depreciate those of the cat: the latter, however, is not less useful, and certainly less mischievous than the former. The delight, however, which this animal takes in sporting with the unfortunate victim that falls under its power, in prolonging its tortures, and putting it to a lingering death, it must be confessed is not a very favorable trait of its character.

The cat is very much attached to the place where it has been brought up, or long made its abode; and instances frequently occur of cats having returned to the place from whence they had been carried, although at several miles distance, and even across rivers, when it was impossible that they should have any knowledge of the road.

In former times this animal was held in so high estimation, that its preservation constituted, in some countries, an object of public attention. In the reign of Howel, the good king of Wales, who died A. D. 948, laws were made to fix the price of valuable animals, among which the cat was included, on account of its utility and scarcity. The price of a kitten, before it could see, was fixed at one penny: after its

eyes were open, which is in the space of eight or nine days from its birth, it was advanced to two-pence; and as soon as proof could be given of its having caught a mouse, its value was, in consequence of that exploit, rated at fourpence; a very considerable sum in those days when money was so exceedingly scarce, being at least equivalent to the price of a good sheep.

By the same laws, if any one should steal or destroy a cat that guarded the prince's granary, he was to expiate the crime by the payment of as much wheat as would form a heap high enough to cover the cat's tail when it was suspended by it with the nose touching the floor, or by the forfeiture of a good ewe, with her fleece and lamb. It was likewise provided, that when a cat was sold, its sight and hearing should be perfect, and its claws whole, and if a female, a good nurse to kittens: if any defect were found in regard to these qualities, the seller was to forfeit to the buyer one fourth part of the price.

From these circumstances it appears, that the cat was not originally a native of these islands, and that great pains were once taken to preserve and improve the breed of an animal which is now grown so common, that it is held in less estimation than it deserves.

It is, my dear Sir, a disagreeable but just observation, that in many cases the favors of Providence excite not only less admiration, but also less gratitude from being liberally bestowed and plentifully diffused.

The maternal affection of the cat is very remarkable, and she has frequently been known to nurse the young of other animals with the utmost care and tenderness.

In the Naturalist's Calendar, a very curious circumstance of this nature is stated: "A boy had taken three young squirrels in their nest, put them under a cat which had recently lost her kittens, and found that she suckled them with the same affection as if they had been her own progeny. But so many persons flocked to see this phænomenon, that the foster-

mother at length became alarmed for the safety of her charge, and hid them over a ceiling, where one died.

Mr. White, in his *Natural History of Selborne*, observes, that he had a little helpless leveret brought to him, which was nourished by the servants, with milk from a spoon; and about the same time his cat kitten-ed, and the young were dispatched. The leveret was soon lost, and was supposed to have fallen a prey to some cat or dog; but one evening, about a fortnight afterwards, as Mr. White was sitting in the garden, he observed his cat trotting towards him, and followed by the leveret, which she had nourished with the utmost affection.

When Mr. Baumgarten was at Damascus, he saw a large house which was solely used as a kind of hospital for cats, and was said to be completely filled with those creatures. On enquiring into the origin of this curious institution, he was informed that Mahomet, when he once resided there, kept a cat in the sleeve of his gown, and fed it carefully with his own hands; in consequence of which, his followers in this place paid the most superstitious respect to these animals, and supported them in this manner by public alms, which were very adequate to the purpose.

THE WILD CAT

is so intimately allied to the domestic kind, that they evidently constitute the same species. The form is the same in both, and they exhibit the same characteristic propensities: the only observable distinction is, that the wild cats are larger and stronger than the tame kind, and their fur is much longer, but very soft and fine.

The province of Chorazin, in Persia, is famous for a beautiful species of this animal: its size is about the same as that of our common cat; its colour is of a fine grey, and its fur cannot be exceeded in softness and lustre: its tail is long, and covered with hair of the length of five or six inches: it frequently turns it upon its back like a squirrel, and it then resembles a plume of feathers.

The cat of Angora is larger than the common wild cat. Some of these creatures are white, and others of a dun colour; and all of them have a ruff of long hair round the neck, which gives them the appearance of small lions.

Wild, as well as tame cats, are found with very little variety in almost every climate, and in almost every country of the old and the new continent. This animal is indeed extensively diffused, and existed in America before its discovery by the Europeans.

In England the wild cat is not very common, although some of an enormous size have been taken: one was killed in the county of Cumberland which measured above five feet in length from the nose to the end of the tail.

Wild cats always inhabit mountainous and woody tracts; where they live in trees, and hunt for birds and small animals. They sometimes sally from their retreats and make great havoc among poultry: they will kill young lambs, kids and fawns, and are exceedingly destructive among rabbits in the warrens.

A tradition is extant of a serious conflict which once took place at the village of Bamborough, in Yorkshire, between a man and a wild cat. It is said that the fight commenced in an adjacent wood, and was continued from thence into the porch of the church, where it ended fatally to both combatants, for each died of their wounds. A rude painting in the church commemorates the event, and some of the stones are said to be tinged with bloody stains, which the properties of soap and water have never been able to obliterate. In all probability, however, these stains are merely imaginary, as the natural tinge of the stones may be of a red colour.

This short letter on the habits and propensities as well as the utility of an animal that is so common as to be universally known, and every day seen, will, I flatter myself, afford you some amusement, and perhaps inform you of some particulars with which you

were unacquainted. The native goodness of your disposition renders it unnecessary that I should remonstrate against the brutal cruelty of those who excite dogs to lacerate and worry so useful a domestic animal as the tame cat, and feel a sottish pleasure in contemplating a spectacle worthy of being exhibited only before a barbarian.

In my next I shall diversify the scene, by calling your attention from a creature so generally known, to others with which you are less acquainted, and which will therefore more forcibly excite your curiosity. In the mean while with sincere affection,

I am, dear Sir,

Your's, &c.

LETTER XXVII.

"There sublim'd

To fearless lust of blood, the savage race
Roam, licenc'd by the shading hour of guilt."

THOMSON.

DEAR SIR,

I AM now going to lead you forward in the survey of this ferocious tribe of animals. We will begin our ramble among the weaker sort of those which are usually denominated the cat kind, and which, if through a deficiency of strength, they are less to be dreaded than those of a larger size, possess the same ferocity of disposition as the most formidable. Among these you will indeed find some most beautiful forms, but all characterized by the same propensity to carnage and blood. This observation you will, in the first place, find verified in the

OCELOT.

This animal, when it has taken its prey, is said to prefer the blood before the flesh. A male and a female Ocelot, which had been taken very young, were some years ago brought to Paris. At the age of three months they became so strong and fierce

as to kill a bitch that had been put to them as a nurse. A live cat being thrown to them, they immediately killed it, and sucked the blood, but would not eat the flesh. The male never allowed the female to partake of his food until he had satisfied his own appetite.

One of these animals, exhibited at Newcastle, although extremely old, shewed evident marks of untameable ferocity. It was kept closely confined, and would not admit of being caressed by its keeper, but growled continually, and always appeared in motion.

The ocelot, especially the male, is extremely beautiful, and its fur is most elegantly variegated. Its general colour is a bright tawney: its forehead and legs are spotted with black, and a stripe of the same colour extends along the top of its back from head to tail. Its shoulders, sides and rump are beautifully marbled with long stripes of black, forming oval figures, filled in the middle with small black spots, and its tail is irregularly marked with similar spots. The colours of the female are less vivid, and also less beautifully arranged than those of the male. In shape, this animal resembles the common cat, but is much larger, being, according to Buffon, two feet and an half high, and four feet in length.

The ocelot is a native of South America, and is also found in America. It lives chiefly in the mountains, and conceals itself in the leafy tops of trees, from whence it darts upon such animals as come within its reach. It sometimes stretches itself along the branches, as if it were dead, till the monkeys, prompted by their natural curiosity, come within its reach, and experience the fatality of their mistake.

THE MARGAY

is smaller than the ocelot, being nearly of the size of the wild cat, which it resembles in its habits and characteristic propensities. It is sometimes called the Cayenne cat, and is common in Brazil, and various parts of South America. Several species of this animal are found in India, and in the southern parts of Africa; but these in general have been so negligently observed, or so injudiciously represented by travel-





lers, as to render it impossible, from their relations, to form any perfect description of this animal, which constitutes one of the many desiderata of natural history. Its colours vary, but in general it is tawney, the face and body marked with stripes and spots of black, the breast and insides of the legs white, and spotted with black, and the tail long and alternately spotted with grey, black and tawney. On the whole, the margay is a most beautiful animal. In some parts it is known by the name of the tyger cat.

THE BLACK TYGER

differs from the last described animal chiefly in its colour, which is dusky, and in some of the species spotted with black. The inferior parts of the body are of a palish cast, the upper lip white, and covered with long whiskers. Above each eye it has very long hairs, and at the corner of the mouth a black spot. It grows to the size of a heifer of a year old, and has remarkable strength in its limbs.

M. de la Borde says, that these animals are excellent swimmers, and that they frequent the sea shore, and eat the eggs deposited there by the turtles. They likewise destroy alligators, lizards and fish. In order to catch the alligators, they lie down on their bellies at the edge of the river, and strike the water to make a noise. The alligator then raises its head above water, in expectation of its prey, but they dart their claws into its eyes, and drag it on shore, where it falls a victim to the animal on which it intended to feast; like wicked men who frequently fall into the snares which they have laid for others, and draw upon themselves those calamities which they designed to inflict.

The black tyger inhabits Brazil and Guiana, where it is much dreaded by the natives. It is indeed, a ravenous and ferocious animal, but fortunately the species is not numerous.

THE LYNX.

This name appears to have been given by the ancients to a creature which existed only in imagination, and had no existence in the system of nature. To

this imaginary creature they attributed extraordinary qualities, and in their fabulous descriptions, represented its sight so piercing, as to penetrate stone walls, and every other opaque body.

The real lynx, however, which nature, and not imagination has formed, is found by naturalists to be a very different animal from that which a poetical fancy had created. It possesses none of those extraordinary qualities attributed to it by the ancients. Its eyes are indeed extremely brilliant, which, with the sprightliness of its air and aspect, aided by a little exaggeration, might furnish poetry with striking similies and beautiful allusions.

The lynx differs considerably from every other animal of the cat kind. Its distinguishing characteristic is the length and erect position of the ears, which are ornamented at the end with a tuft of long black hair. The length of its body is upwards of four feet, and that of the tail not above six inches. Its hair is long and soft, and marked with dusky spots, which vary in colour according to its age. Its legs and feet are thick and strong, and its eyes of a pale yellow.

The fur of this animal is valuable for its warmth and softness. Great quantities of it are imported from the northern parts of Europe and America; and the farther north the animals are taken, the more beautiful is their fur, being whiter, and the spots more distinct. It may also be observed, the winter furs are thicker, more glossy and beautiful than those which are preserved in the summer season.

In hunting for its prey, the lynx frequently climbs to the tops of the highest trees; and neither weazles, ermines, nor squirrels, are often able to escape it. It watches for the fallow deer, the hare, and other animals; darts down from the branches where it lies concealed, seizes them by the throat, and sucks their blood; after which it leaves them and goes in search of fresh game. It is consequently a very destructive animal, as it is not easily satisfied with carnage, and sometimes makes great havoc among the flocks.





Hyæna.



Leopard.

When attacked by a dog, it lies down on its back, and defends itself desperately with its claws, and in this posture frequently repels the assailant.

THE CARACAL

very much resembles the lynx, but yet appears to be of a different species, as it is never found in the countries which the former inhabits. It exists only in hot countries, where it generally attends the panther, the ounce and the lion; especially the last, and lives almost entirely on the refuse of their prey. It is commonly called the lions' provider, and is supposed to be employed by the lion to hunt for his prey by the scent, which in this animal is exceedingly acute.

THE OUNCE

is also by some writers confounded with the panther, to which, indeed, it bears no small resemblance in the arrangement of its spots. It is, however, much inferior in size, seldom exceeding three feet and a half in length; its hair is longer than that of the panther, as is also its tail considered in proportion to its size. Its colour is also somewhat different, being a light grey, tinged with a yellow cast.

This animal seems to be more generally diffused than the panther; for it is common in Barbary, Persia, and China, and is sometimes trained for hunting. When accustomed to subjection it is exceedingly gentle. The hunters carry it with them on horseback, and have it as much under command as a setting dog; when sent out it will return at a call, and jump up behind its master.

The scent of this animal is inferior to that of the dog. It hunts solely by the eye, and is not sufficiently swift to overtake its prey in a long chase; but it is exceedingly nimble in leaping. It frequently climbs trees to place itself on the watch, and suddenly to dart upon such animals as it sees passing.

THE LEOPARD.

This beautiful, but ferocious animal, is an inhabitant of the interior parts of Africa, where the species most abounds; but it is also found in several parts of India, China, and Arabia; and is hunted for its flesh

as well as its skin, which is exceedingly beautiful, being of a fine bright yellow, thickly diversified with small black spots, disposed in clusters highly ornamental. When brought to Europe, the skins of these animals are greatly esteemed.

Their flesh is said to be as white as veal, and well tasted: it is much relished by the negroes, who frequently take them in pit-falls, covered at the top, and baited with a morsel of some kind of flesh. The female negroes make collars of their teeth, which they wear as charms, and to which their imagination, clouded by ignorance, and influenced by superstition, its natural concomitant, has induced them to attribute extraordinary virtues.

When these animals cannot find a sufficient supply of food in their native solitudes in the uncultivated parts of Africa, they frequently come down in great numbers into the lower Guinea, where they make horrible devastations among the herds of cattle which cover the plains of that fertile country, and spare no living creature that has the misfortune to fall in their way.

The late Sir Ashton Lever kept a leopard in a cage at Leicester-house, where it became so tame as always to appear gratified by attention and caresses; testifying its pleasure by purring, and rubbing itself against the bars like a cat. Sir Ashton presented it to the royal menagerie in the Tower, where a person previously acquainted with it, went, after an interval of more than twelve months, and was greatly surprised to find himself recognized by the animal, which began to renew its usual caresses.

The general size of the African leopard is nearly that of a pretty large mastiff, and few of them exceed four feet in length.

THE PANTHER

is equal in size to the largest of our mastiff dogs, but its legs are somewhat shorter, it is consequently larger than the leopard, being frequently from five to six feet long, whereas the latter, as already observed, seldom exceeds four feet. It inhabits Africa from Bar-

bary to the remotest parts of Guinea: it is absolutely untameable, and when kept under confinement, growls almost continually.

The panther is extremely ferocious, but happily prefers the flesh of brute animals to that of the human species; although when pressed with hunger, it attacks every living creature without distinction. It takes its prey by surprise, either lurking in thickets, or creeping on its belly until it come within its reach: it will even climb trees in pursuit of monkeys, and other small animals, so that nothing is perfectly secure from its attacks.

The colour of the panther is yellow, of a deep tint on the back, but growing paler towards the belly, which, together with the chest, is white: on the back, sides, and flanks, it is beautifully marked with black spots, disposed in circles of four or five each, with a single spot in the centre: its ears are short and pointed; its eyes fierce and restless; and its whole aspect is marked with the most untameable ferocity.

The ancients were well acquainted with the panther; and the Romans obtained from the desarts of Africa great numbers of these animals for their public shews. Scæurus exhibited a hundred and fifty of them at one time; Pompey, four hundred and ten; Augustus, four hundred and twenty. Panthers must have been at that time extremely plentiful in the northern parts of Africa, and they still swarm in the tropical regions of that continent.

That I may not weary you with too long a letter, I will refer to another opportunity a description of the tyger and the lion, those sovereigns of the forest, and tyrants of the animal world. For the present I shall bid you adieu, professing myself with sincere affection,

Dear Sir,

Your's, &c.

LETTER XXVIII.

"The tyger darting fierce
Impetuous on the prey his glance has doom'd."

THOMSON.

DEAR SIR,

IN our progressivé view of ferocious quadrupeds, we are now to proceed to the contemplation of the tyger, one of the most beautiful, but at the same time one of the most rapacious and destructive of the whole animal race. Its propensities, however, shew how little a mischievous disposition can be compensated by a beautiful form.

This animal has an insatiable thirst after blood; and even when satiated with food, is not satisfied with slaughter, but displaying the genuine characteristics of consummate and innate malignity, continues its ravages until objects whereon it may exercise its fury, can no longer be found.

Happily for the rest of the animal race, as well as for mankind, this destructive quadruped is not very common, nor the species widely diffused; being confined to the warm climates of the east, especially India and Siam, although some are found as far north as China. No part of the world, however, is so much infested with tygers as India, nor any part of India so much as the province of Bengal, of which the southern part towards the mouths of the Ganges, forming a vast labyrinth of woody islands, called the Sunderbunds, may be called the great rendezvous of those destructive animals. This extensive wilderness, according to Major Rennel, is so covered with wood and infested with tygers, that no attempts have ever been made to clear and settle it; and, indeed, an enterprise of this kind would, in the opinion of those who are best acquainted with the country, be extremely dangerous, and almost impracticable.

The tyger generally grows to a larger size than the

leopard or the panther, though somewhat more slender in proportion to its height and length; and its form so completely resembles that of a cat, as almost to induce us to consider the latter animal as a tyger in miniature. The most striking difference which is observed between the tyger and the other mottled animals of the cat kind, consists in the different marks on the skin. The panther, the leopard, &c. are spotted, but the tyger is ornamented with long streaks quite across its body, instead of spots. The ground colour in those of the most beautiful kind is yellow, very deep on the back, but growing lighter towards the belly, where it softens to white, as also on the throat and the insides of the legs. The bars which cross the body perpendicularly from the back to the belly, are of the same beautiful black; and the skin altogether is so extremely fine and glossy, that it is much esteemed, and sold at a high price in all the eastern countries, especially China. The mandarins cover with it their seats of justice, and use it also for cushions and pillows.

The tyger is said by some to prefer human flesh to that of any other animal: it is certain, however, that it does not, like many other beasts of prey, shun the presence of man, and far from dreading his opposition, frequently seizes him as his victim. These ferocious animals seldom pursue their prey, but lie in ambush and bound upon it with a surprising elasticity, and from a distance almost incredible. The strength, as well as the agility of this animal is wonderful: it carries off a deer with the greatest ease, and will even carry a buffalo. If left undisturbed, it plunges its whole head up to the very eyes into the body of its victim, to satiate itself with the blood. It attacks all kinds of animals, except the elephant and rhinoceros: furious combats sometimes happen between the tyger and the lion, in which both sometimes perish.

The ferocity of the tyger can never be wholly subdued: for neither gentleness nor restraint makes any alteration in its disposition: it appears insensible of the attention of its keeper, and would tear the hand

that feeds it equally with that by which it is chastised.

Father Fachard has favoured us with an account of a combat between a tyger and two elephants at Siam, of which he was a spectator. The heads and trunks of the elephants were defended from the claws of the tyger by a covering made for that purpose. They were placed in the midst of a spacious inclosure. One of them approached the tyger, which was confined by cords, and received two or three heavy blows upon its back from the trunk of the elephant, which beat it to the ground, where it lay for some time as if it had been dead; but although that had much abated its fury, it was no sooner untied, than with a horrible roar it made a spring at the elephant's trunk, which that animal dexterously avoided by drawing it up, and receiving the tyger on its tusks, threw it up into the air. The other elephant was then allowed to come up, and, after giving the tyger some very heavy blows, would undoubtedly have killed it, if an end had not been put to the combat.

Notwithstanding the determined ferocity of this creature, a sudden surprise has sometimes had an almost miraculous effect in preventing its attack.

Some ladies and gentlemen being on a party of pleasure under a shade of trees on the banks of a river in Bengal, were suddenly surprised by observing a tyger placing himself in a posture for making the fatal spring. One of the ladies, with amazing presence of mind, seizing an umbrella, and unfurling it directly in the monster's face, it instantly retired. Another party, however, had not the same good fortune, and we cannot, without sorrow, record the melancholy catastrophe.

On the 22d of December, 1792, Mr. Monroe, an illustrious character, and three other gentlemen, went on shore on Sauger island, in the East-Indies, to shoot deer. They saw several tracks of tygers, notwithstanding they continued their sport for some hours, and then sat down to rest themselves, after taking the usual precaution of making a great fire, and firing

their pieces several times in the air, in order to terrify and drive away any savage animals that might be lurking around. They had but just commenced their repast, when one of their attendants informed them that a fine deer had approached within six yards. The gentlemen instantly seized their guns, when a tremendous roar like thunder was heard, and an enormous tyger sprang on the unfortunate Monro, and carried him off through bushes and every other obstacle, without any apparent difficulty; every thing yielding to his prodigious strength.

In this dreadful emergency, the other gentlemen immediately fired at the beast, and, as it appeared, not without effect, for in a few minutes Mr. Monro rejoined them, covered with blood. They lost no time in procuring medical assistance, but the unfortunate gentleman's skull was so fractured by the teeth of the monster, and his neck so torn by its claws, that he survived but a short time. Thus fell a worthy and gallant officer, who, had he not been cut off by this unfortunate accident, would undoubtedly have rendered the most essential services to his country. This tyger appeared to be not less than four feet and a half high, and nine long; and when he made the fatal spring, his roar was terrible beyond description. Fierce and tremendous as this animal is, the hunting of him is a favorite diversion with some of the eastern princes.

The tygress produces four or five young at a litter, and when robbed of them, her fury rises to the most ungovernable height: regardless of danger, she pursues the plunderers, who are generally compelled to release one of their captives, in order to retard her progress: she has no sooner, however, taken it to the nearest covert, than she renews the pursuit even to the gates of buildings, or the edge of the sea; and when her exertions prove unavailing, she expresses her maternal agony by the most tremendous howlings.

LETTER XXIX.

"What if the lion in his rage I meet !
 Oft in the dust I view his printed feet ;
 By hunger roused he scours the groaning plain,
 Graunt wolves and sullen tygers in his train,
 Before them death with shrieks directs their way,
 Fills the wild yell, and leads them to their prey."

COLLINS.

AFTER describing the beautiful form and ferocious disposition of the tyger, I shall now, my dear Sir, proceed to a description of the lion, which is the noblest and most courageous of all the feline race.

THE LION

may justly be styled the lord of the forest : there, indeed, he ranges uncontrolled ; for his roar is so tremendous, that, when reverberated by the woods or mountains, it resembles thunder, and all the animal creation flies before it. This roar is the lion's natural note ; for when enraged he has a different growl, which is short, broken, and reiterated. He then lashes his sides with his tail, erects his mane till it stands up like bristles, and his eyes seem to emit sparks of fire.

The form of the lion is a perfect model of strength combined with agility, and at the same time strikingly bold and majestic. His large and shaggy mane encircling his awful front, his ample eye-brows and fiery eyes, which, upon the least irritation, glow with a fierce and striking lustre, with the formidable appearance of his teeth, altogether form a picture of terrific grandeur, unparalleled in any other species of the animal creation.

The face of the lion is very broad, and quite surrounded with the mane ; which gives it a singularly majestic appearance ; for the top of the head, the temples, the cheeks, the under-jaw, the neck, the breast, the shoulders, the belly and the hinder-part of the legs, are all furnished with long hair, but that on the rest of the body is very short : his tongue is



Panther.



Lion.



exceeding rough and prickly, and by licking will easily take off the skin of a man's hand; a circumstance which ought carefully to be guarded against by those who keep lions, or amuse themselves with them, although ever so well tamed; for if this animal once either see or taste blood, his fury is beyond all restraint, and he immediately destroys his victim. Several instances of this kind have been known.

One gentleman in particular kept a lion which was almost as tractable as a dog, and used to caress his master in the same manner as that animal. The gentleman often used to permit him to lick his hands, a familiarity against which he was often cautioned by an intelligent friend. Regardless, however, of this warning, and confiding in the attachment of his favorite, he continued the practice until one time the prickly tongue of the lion fetched blood from his hand, upon which the animal forgetting his former affection, instantly flew upon his master and tore him to pieces.

The general colour of the lion is a tawny yellow; his height from four feet to four feet and a half, and his length eight or nine feet; but those we see exhibited in this country are seldom so large. The formation of the eye, in regard to the contraction and dilatation of the pupil, is nearly the same in the lion as in the cat: the former cannot, any more than the latter, bear a strong light, and consequently he seldom appears abroad in the day, but prowls about chiefly at night. As the sight of the lion, notwithstanding the fierce sparkling of his eyes, is observed to be defective; his smelling appears to be less acute; and as all living creatures avoid him, he is for the most part obliged to have recourse to artifice to take his prey. Like the tyger, therefore, he bounds upon it from some place of concealment, and on these occasions easily makes springs of eighteen or twenty feet. Sometimes he makes two or three of these bounds; but if he miss his object he gives up the pursuit, returns to his place of ambush, and lies in wait for another opportunity. The lion, as well as the tyger

commonly chuses his lurking place near a spring, or on the brink of a river, where he may have an opportunity of surprising such animals as come to quench their thirst.

However, although the lion and the tyger have a similar method of watching and seizing their prey, they differ considerably in some of their other characteristics.

The natural disposition of the lion is universally allowed to have more of magnanimity, and contempt for inferior enemies, than that of most other large and predatory animals. This has induced many persons to relate wonderful, and, in some instances, altogether incredible stories respecting this royal beast. "A Jacobin monk of Versailles," says the Pere Labat, "being in slavery at Mequinez, resolved, with a companion, to attempt his escape. They got out of their prison, and travelled during the night only, to a considerable distance, resting in the woods by day, and hiding themselves among the bushes. At the end of the second night they came to a pond. This was the first water they had seen since their escape, and of course they approached it with great eagerness; but when they were at a little distance from the bank, they observed a lion. After some consultation, they agreed to go up to the animal, and submissively to implore his pity; accordingly they kneeled before the beast, and in a mournful tone related their misfortunes and miseries. The lion, as they told the story, seemed affected at the relation, and withdrew to some distance from the water. This gave the boldest of the men an opportunity of going down to the pond, and filling his vessels, while the other continued his lamentable oration. They afterwards both passed on their way before the lion, which made no attempt whatever either to injure or molest them." The story, as thus related by two superstitious old monks, is too ridiculous to obtain any credit as to the motives which induced the animal to such a mode of conduct. It, however, may be considered to rest on a better foundation, when it is observed that the lion

might have had his appetite fully satisfied previously to their appearance, and at that moment been too indolent to attempt to injure them. His retiring at the relation of their story, was, no doubt, to suit his own convenience only thus interrupted as he was by the wanderers.

Of the generosity of the lion many instances stand on record. Every scholar is acquainted with the story of Androcles, the Roman slave, who, being ill-treated by his master, the proconsul of Africa, escaped into the desert, where, exhausted with hunger and fatigue, he took up his lodging in a cavern, which, contrary to his expectation, proved to be a lion's den. He had not remained long before an enormous lion entered. Androcles found it impossible to escape, and gave himself up for lost. The lion approached him, but instead of devouring him, held up his foot, which was wounded and bloody, and made a growling complaint as if he craved the man's help. Androcles, considering that nothing could add to the danger of his situation, with a courage that despair excited, and undoubtedly with a trembling hand, laid hold of the lion's foot, and drew out a large thorn which had been the cause of his pain. The beast, finding himself much eased, caressed the man who had rendered him this service, then laid down and slept beside him. The next night the lion went out again, found some prey, brought it home and laid it at the feet of his benefactor. A perfect familiarity commenced between Androcles and the lion, and in this manner they lived three years.

At the expiration of this period, the slave knowing that the term of his master's proconsulship in Africa was expired, and supposing that he himself was forgotten, left the den in the lion's absence, and made his way to the Roman colony; but being unfortunately recognized for a run-away slave, he was taken and sent to Rome to his master. By the Roman laws the master was invested with absolute power over his slaves, and this unfeeling barbarian ordered Androcles to be thrown to the wild beasts in the amphithe-

atre. No sooner was the poor slave placed in this dreadful situation, than he was approached by an enormous lion, which, as both he himself, and the spectators of this interesting scene supposed, was to bury him in its voracious stomach. At the moment, however, when the people expected to see the terrible creature open his tremendous jaws to devour his victim, he, to every one's surprise, fell down at the man's feet, and began to fawn upon him like a spaniel. Androcles then recognized him to be the identical lion with which he had lived so familiarly in Africa, which, having been unfortunate like himself, had been taken and carried to Rome for the public shows.

This happened in the reign of Caligula, and that emperor being informed of so extraordinary a circumstance, obliged the cruel master to liberate the slave. By the emperor's order the lion was also given to Androcles, who traversed the streets of Rome attended by his old friend. The lion would never leave him; but constantly accompanied him, and proved to the man a source of wealth, by the emoluments which it procured him for the gratification of public curiosity.

A remarkable instance of recollection and grateful attachment is related, by Mr. Hope, of a lion belonging to her grace the Duchess of Hamilton:---“One day” says our author, “I had the honor of dining with the duchess. After dinner the company attended her grace to see a lion fed which she kept in the court. While we were admiring his fierceness, and teasing him with sticks, to make him abandon his prey and fly at us, the porter came and informed the duchess, that a serjeant, with some recruits at the gate, begged to see the lion. They were accordingly admitted at the moment the lion was growling over his prey. The serjeant, advancing to the cage, called ‘Nero, Nero, poor Nero, don’t you know me?’ The animal instantly turned his head to look at him; then left his prey, and came, wagging his tail, to the side of the cage. The man put his hand upon him and patted him; telling us at the same time that it was three

years since they had seen each other; that the care of the lion, on his passage from Gibraltar, had been committed to him, and he was happy to see the poor beast shew so much gratitude for his attention."

When the lion has become acquainted with human superiority, his courage has become so degenerated, that he has even been scared away with a shout; and in a tame state, we have an instance of one of these animals being overcome by a goat. Mr. Bruce, commander-general of the Senegal company on the coast of Africa, had near him a full grown tame lion, when a flock of goats was brought that had been just purchased. They were so terrified at this enormous animal, that all of them ran off except one; but he, looking stedfastly at the lion, stamped with his foot on the ground in a menacing attitude; then retreated three steps, and, instantly returning, struck the lion's forehead so forcibly with his horns, that the animal was nearly stunned. The goat repeated his blow several times, and the lion was thrown into such confusion, that he was at length obliged to conceal himself behind his master.

The lion is sometimes held at bay a considerable time by the buffalo; and it is not always that he proves victorious over other animals, as will appear from the following anecdote:

A Florentine gentleman had a mule so exceedingly vicious as to be altogether ungovernable, from its kicking and biting every person that approached it. He ordered it to be turned into the court of his menagerie, and a lion to be let loose upon it. The lion roared aloud when he first observed the animal; but the mule, without seeming at all alarmed, ran into a corner of the court, and so placed herself that she could only be attacked in the rear. In this situation she waited the onset, at the same time watching with the greatest attention all the motions of her adversary. The lion, aware of the difficulty, used all his art, but to no purpose, to throw her off her guard. At last the mule, seizing a favourable opportunity, gave him such a salute in the face with her hind feet, as to

beat out eight or ten of his teeth: and to compel the animal to return to his lodge, without making any further attempts to seize upon her, thus leaving her in quiet possession of the field.

It is a vulgar error that the lion is alarmed at the crowing of a cock. He is, however, said to be frightened at the appearance of serpents near him. Some of the Moors, induced by this notion, when they are pursued by a lion, are said occasionally to loose their turban entirely out, and wave about the twisted linen so as to make it appear like a serpent. The *Sieur Frejus*, in his *Travels in Mauritania*, informs us that this will always have the desired effect of driving the animals away.

The lion is a long-lived animal, although the precise period of its existence is perhaps unknown. By *Buffon*, it is limited to twenty or twenty-two years; but it is certain that its life is of much longer duration. The great lion called *Pompey*, which died in the Tower A. D. 1760, was known to have been there above seventy years, and another brought from Africa, died in the same place at the age of sixty-three.

The lioness goes five months with young, and produces three or four at a time. She is less than the lion, and not so fierce, except in defence of her whelps, or in procuring them food, in which cases she is not inferior to the lion in ferocity, nor less to be dreaded.

Among the colonists at the Cape of Good Hope, hunting the lion is a favourite diversion. In the daytime, and on the open plain, twelve or fourteen dogs will master a huge lion. Although the strength of this animal is so great, that one of them has been known to seize an heifer, carry it off with ease, and even when holding it in his mouth, to leap over a ditch apparently without any difficulty, yet it is not very fleet in running. In hunting, therefore, the dogs soon come up with him: the lion then, with a kind of sullen disdain, turns about and waits the attack, shaking his mane, and roaring with a short and broken growl. The dogs then rush on him on every

side, and tear him to pieces. The flesh of the lion is said to have a strong and disagreeable flavour, but, however, it is frequently eaten by the negroes; and the grease, which is of a penetrating nature, is of use for medical purposes.

The Moors use the skin of the lion as quilts for their beds. It is said to have the remarkable property of keeping rats or mice out of any room where it is deposited, for a considerable length of time after it is taken from the animal.

I have now, my dear Sir, conducted you in your range through the deserts and the forests to survey that ferocious tribe of animals, which are terrible to man, as well as other creatures. In these, as in all others, the power of the Creator is conspicuous, although exhibited in forms of terror. This question may here naturally arise: How is it consistent with infinite goodness, that animals should devour one another, and be supported at the expence of one another's lives? To judge whether this system of predaceous violence among animals can even, according to our limited view of the consequences, be deemed a real evil, we ought to take the following circumstances into consideration.

In the present state of things immortality is out of the question: the universal law of nature ordains, that whatever lives must die; and it does not appear that the alteration of this law could add to the happiness of the animated creation. To man, the present life, in which evil is invariably mixed with good, is only probationary, and preparatory to another and a happier state of existence, where evil shall be excluded, and felicity be permanent and without alloy. To other creatures life is a blessing, which they enjoy for a time without any apprehension of its termination, or any anxiety for future occurrences. The present moment limits the sphere of their pleasures and their pains, as well as the extent of their hopes and their fears. The system of prey among animals, like the impulse of interest among men, is a spring of activity and motion: pursuit forms the employment, and

seems to constitute the pleasures of a considerable part of the animal creation; defence, flight, or instinctive precaution, is also the principal business of another part; and even in regard of the latter tribe, we have no reason to suppose that their happiness is much disturbed by their apprehensions. Their danger, it is true, continually exists, and nature has endowed them with an instinctive sagacity, which renders them so far sensible of it as to provide against it in the best manner they are able; but it is only when the attack is actually made that they appear to suffer from their situation.

To contemplate the insecurity of their condition with anxiety and dread, requires a degree of reflection which the compassionate benevolence of the Creator has kindly refused to them; thus graciously providing that their present safety may not be disturbed with the apprehensions of future danger, nor their immediate enjoyments embittered by the contemplation of distant calamity. The hare, notwithstanding the number of its dangers and its enemies, is as playful, and apparently as happy as any other animal, until the very moment that the hounds appear in view.

To this sketch of the Divine wisdom and goodness exhibited in the œconomy of animal life, we may, my dear Sir, add another consideration that equally tends to develop the attributes of the Great Author of Nature.

The three modes by which life is terminated are, disease, decay, or violence. The brute creation, living, according to the simple dictates of nature, is not very subject to acute diseases; and this must certainly be esteemed a happy circumstance of animal life. But let us consider the state of suffering in which a poor animal is placed when left to perish by age or decay. Man, in his sicknesses and infirmities, has the assistance of his fellow creatures, who, if they cannot alleviate his pains, can at least minister to his necessities, and supply the place of his own activity; but the brute, in his natural state, does every thing

for himself. When, therefore, his strength, his speed, or his senses fail, he is necessarily delivered up either to absolute famine, or to the protracted misery of a life slowly wasted by pain and scarcity of food. May it not then be considered as a benevolent dispensation of Providence, that in the present constitution of things, animals generally either fall victims to one another, or are slaughtered for the sustenance of man; and few of them, either in a wild or domestic state, suffer the miseries of helpless age and gradual decay.

I have, my dear Sir, expatiated somewhat more largely on this subject, as the circumstance of animals supporting life by devouring one another, forms the chief, if not the only instance in the œconomy of nature, in which the marks of design are evident, but the character of utility obscure. The whole affords a curious subject of contemplation; and although we can only see a very small part in the comprehensive system, impartial reasoning and serious reflection, will render the view of things far different from what it appears to the eye of a superficial observer, and oblige us to exclaim with the poet--

"See and confess, one truth must still arise,
'Tis this, though man's a fool, yet God is wise."

I am,

Dear Sir, &c.

LETTER XXX.

"Of all the speechless friends of man,
The faithful dog I deem,
Deserving from the human clan,
The tenderest esteem."

HAYLEY.

DEAR SIR.

I COME now to a description of animals, carnivorous indeed, but far less mischievous and dangerous than those which we have lately contemplated. These I shall present to you under the general denomination

of the dog kind, which is divided into a number of species, and widely diffused.

THE DOG

is so well known, that although the race admits of numberless varieties, its external form scarcely requires any description; but its habits and propensities form an interesting subject for the contemplation of the naturalist.

This animal, equally remarkable for its docility, fidelity, and attachment, seems to have been designed by the Author of Nature as assistant and companion to the human species. In order to accomplish the subjection of the animal creation, it was necessary that man should select some, of which he might make use in the subjugation of the rest; and among all the different orders of animated beings, none was so entirely adapted to this purpose as the dog; for none so bold and sagacious, so tractable and obedient. To this day he assists man in the destruction of such animals as are hostile to his interests, and in conquering such as contribute to his support or pleasure. The dog, when taken into a participation of empire with man, as if conscious of his own importance, exerts a degree of superiority over all animals that require human protection. The flock and the herd obey his voice: he conducts and guards them, and considers their enemies as his own; and is equally useful when the sound of the horn, or the voice of the huntsman calls him to the field.

To describe, or even to enumerate all the different kinds of dogs, or the discriminating marks by which each is distinguished, would be not only useless, but impossible. The different breeds are not only innumerable, but, by constant intermixture, perpetually varying; so that every individual displays something peculiar to itself, in shape, colour, or character. No animal in the creation is so susceptible of change, nor so easily modified by climate, food, and education. I have already observed, that those animals which have been long under human management, never preserve the stamp of nature in its original purity like those





Shepherd's Dog



Greenland Dog

which enjoy their original dependence: as the dog is the constant attendant on man, accompanies him into different climates, and in his society adopts more different modes of living than any other creature, it is not a matter of wonder that this animal should exhibit a greater variety than any other; and that the influences of so many different circumstances, with the incessant intermixture of breeds, should preclude every possibility of systematic arrangement. I shall therefore content myself with pointing out some of the most striking varieties, and leave the rest to your own observations.

THE SHEPHERD'S DOG,

is generally considered as the parent stock of the canine race. This faithful animal, ever attentive to his charge, reigns over the flock; and is of the utmost importance in many parts of this country, where extensive tracts of land are solely appropriated to the feeding of sheep and other cattle. This sagacious animal is so obedient to the voice of the shepherd, and and so ready to execute his commands; that in conducting the flock from one place to another, and preventing the sheep from straggling, the services of one well-trained dog will be more effectual than all that could be performed by two or three men, without mentioning the attentive fidelity with which, in his master's absence, he executes his office of a guardian.

THE CUR DOG,

although not considered by naturalists as a distinct race, is, notwithstanding, esteemed such in some parts of this country; and its utility to the farmer and grazier is so great, that in many places no small attention is paid to the breed. They are extremely useful in driving cattle, and exceed the shepherd's dog in size, fierceness, and strength. Some dogs of this kind possess an astonishing degree of sagacity: they know their master's field, are attentive to the cattle that are in them, go of their own accord their daily rounds, and if any interlopers have got among the herd, will quickly drive them out of the grounds.

THE GREENLAND DOG.

This race of dogs is generally white; some, however, are spotted, and others black. The Pomeranian, Siberian, Lapland, and Iceland dogs, as well as those which run wild in America, are all somewhat similar to the Greenland dogs in the sharpness of their muzzles, their long shaggy hair, and bushy tails; and all have some resemblance to the shepherd's dog, but are of a larger size. The Greenlanders, sometimes eat the flesh of their dogs. They make garments of their skins, and use them for drawing sledges, to which they yoke them four, five, or six together.

The dogs of Kamtschatka are nearly of the same kind: they are strong and active, and their colour is commonly black and white. They are exceedingly useful in drawing sledges, the only mode of travelling in that country during the winter, and travel with great expedition. Captain King relates, that during his stay there, a courier with dispatches, performed in a sledge drawn by dogs, a journey of 270 miles in less than four days. According to Captain King's account, who gives a very interesting description of these animals, they strongly resemble the Pomeranian, or wolf dog of Buffon, except that they are larger, and covered with coarser hair. That gentleman also says, that although they vary in colour, the greatest number are of a light dun.

Of the fleetness of these dogs, Captain King gives the following account, in addition to the instance already mentioned: "We were ourselves witnesses," says he, "of the great expedition with which the messenger, who had been dispatched to Bolcheretsk with the news of our arrival, returned to the harbour of St. Peter and St. Paul, though the snow was at that time exceedingly soft; and I was informed by the commander of Kamtschatka, that this journey was generally performed in two days and a half; and that he had once received an express from that place in twenty-four hours, although the distance be not less than one hundred and thirty miles.

These useful animals are trained to this business of

drawing the sledge when they are only whelps; and although the most general mode is to yoke five of them together, two and two, with a leader, yet deviations from this method take place according to circumstances. Mr. Leessop informs us, that he and M. Kaslof, governor of Kamtschatka, set out from Bolcheretsk, with their baggage, in thirty-five sledges, drawn by three hundred dogs, and that his sledge was drawn by thirty-seven, and M. Kaslof's by forty-five of these animals. They arrived at Ponstarisk with no more than twenty-seven out of the whole number, having lost all the rest by the hardships of the journey. From which circumstance we may conclude, that the sufferings of these useful animals are on these occasions very great. Mr. Lessop describes this mode of travelling as very expeditious, but extremely troublesome. He says, the dogs are sometimes very refractory; and that on long journies it is almost impossible to enjoy any repose, by reason of the excessive howling which they make in the night.

In the management of these dogs, great attention is paid to the training of those that are designed for leaders, which are valued in proportion to their steadiness and docility, and one of them is frequently sold for forty rubles, or ten pounds sterling, a great sum in that country.

In driving these sledges, the reins are fastened to a collar put round the neck of the leading dog, and consequently are of little use in directing the rest. The driver has a crooked stick, answering the purpose both of whip and rein, with which, by striking on the snow, he regulates the speed of his dogs. Sometimes he animates them to proceed by his voice; and when they are inattentive to their duty, he chastises them by throwing his stick at them; but at the same time he shews great dexterity in regaining it, which is the greatest difficulty attending his art; for if he happen to lose this instrument the dogs immediately discover the circumstance, and seldom fail to set off at full speed, continuing to run till their strength is exhausted, or the carriage overturned and dashed to pieces.

Upon the whole, it appears from the relations of Mr. Lessop, and others, who have made the experiment, that when many of these sledges travel together, and are necessarily drawn by a great number of dogs, they form a very noisy and tumultuous caravan.

When the summer approaches, the dogs are turned out to provide for themselves, but they always return to their masters when the cold weather commences, when they are poorly fed with the offals of fish. In this part of the world fish is a principal article of the food not only of the dogs, but also of the inhabitants.

I shall now, my dear Sir, proceed in furnishing you with some remarks on the principal distinctions of the canine race.

THE BULL DOG

is probably the most courageous animal that nature has produced. It is not so large as many other kinds of dogs, but very strong and muscular. Its nose is short, and its aspect fierce. Its courage in attacking the bull is well known, and to the disgrace of humanity has been too often put to the trial. The persevering resolution and ardour of these dogs, is exhibited in an instance which happened some years ago at a bull-baiting in the north of England: A person confident of the courage of his dog, laid some trifling wager, that he would, at separate times, cut off its four feet, and that, after every amputation, it would attack the bull. The barbarous experiment was tried, and the dog continued to seize the bull in the same manner as if he had been perfectly whole, exhibiting at the same time a striking example of his ferocious courage, and of the barbarity of his unfeeling owner.

The number of this species of dogs is very much diminished, and its total extinction would be a desirable circumstance; for as it always makes its attacks without barking, it is a very dangerous animal, and ought never to be approached by strangers without great caution. However, as the barbarous diversion of bull-baiting is now almost entirely laid aside, the breed of bull dogs will be little attended to, and pro-



Bull Dog



Bull Dog



bably will be soon lost in the confusion of intermixtures.

The refinement of the last and the present age, has produced a happy effect in abolishing those cruel diversions and savage customs which formerly disgraced human nature. The bull fights in Spain, and the bull-baitings of England, are now almost totally disused. The former, however, exhibited a greater appearance of magnanimity than the latter, as in them the amateurs of the sport themselves attacked the bull; while those who delighted in bull-baiting were only stupid starers, who employed their dogs to perform a business which they themselves durst not undertake, and to face an antagonist which they would have trembled to approach.

THE ENGLISH MASTIFF

was so famous in the time of the Roman emperors, that an officer was appointed to breed and send to Rome such of this species as might be deemed proper for the combats of the amphitheatre. But the genuine and unmixed breed of these dogs, although not absolutely extinct, is now seldom met with; and most of those distinguished by that name are a compound of different breeds.

The mastiff, conscious of the superiority of his strength, has sometimes been known to chastise with great dignity the insults or impertinence of his inferiors. An animal of this kind belonging to a gentleman near Newcastle, had been frequently teased and molested by the barking of a little mongrel; but at length, wearied with such impertinence, he took up the contemptible offender in his mouth, and composedly dropped it over the quay into the river, without offering it any further injury.

THE DALMATIAN, OR COACH DOG,

is very common at present in this country, and is esteemed an elegant attendant on a carriage. It is, however, to be hoped that the progress of refinement and good taste will abolish the custom of depriving the poor animal of so useful and ornamental an appendage as its ears, which is so generally practised,

through the mistaken notion of increasing its beauty. Are not the decorations which nature bestows on each animal its greatest ornaments, and is not an inherence to her laws the perfection of taste?

THE IRISH WOLF DOG

is the largest of the canine species, and its appearance the most beautiful and majestic. It was peculiar to Ireland, but is now almost extinct. This was, according to Buffon, the famous Wolossian dog of antiquity.

Wolves are no longer to be met with in Ireland; and this kind of dog is unserviceable for hunting either the stag, the fox, or the hare: we need not therefore be at a loss to discover the cause of the breed being neglected: it would, however, be worth preserving, as it is a beautiful animal, its aspect mild, and its disposition gentle. Although it never seeks to quarrel with any other dogs, it is far superior in combat both to the bull dog and mastiff, exhibiting those characteristic qualities so much to be admired in rational, as well as irrational beings; strength and courage combined with peaceableness of disposition.

THE HIGHLAND GREYHOUND

is a large, fierce, and powerful animal. It was formerly much esteemed by the chieftains of Scotland, and used in their grand hunting parties, but is now become rare.

THE COMMON GREYHOUND

is the swiftest of all the canine race, but as it wants the faculty of scenting its game, it pursues it by the eye. M. Buffon supposes this to be a variety of the Irish wolf dog, rendered more delicate by the difference of climate and management; and it must be confessed that, both in its form and disposition, it bears no small resemblance to that animal.

Greyhounds were formerly so much esteemed, that by the forest laws of King Canute, it was enacted that no person under the degree of a gentleman, should keep any dog of that kind.

THE BEAGLE

is the smallest of all the dogs kept for the chase, and

is used only in hunting the hare. It is far inferior in speed to that animal, which is the principal object of its pursuit; but by its exquisite scent it traces her footsteps through all her turnings and windings with the greatest exactness, and with wonderful perseverance, until she becomes at length exhausted, and unable any longer to continue her flight.

THE HARRIER

differs from the beagle in being somewhat larger, as also more nimble and vigorous. It pursues the hare with eager impetuosity, and scarcely gives her any time to breathe; and the most active sportsman finds it sufficient exercise to keep up with the pack. These hounds exert their voices with cheerfulness, and make that lively harmony which has ever delighted the ears of the true sportsman.

THE FOX-HOUND.

Great Britain excels all other countries in her breed of fox-hounds, whether we consider their swiftness, or their perseverance. The climate seems congenial to their nature, for the race is said to degenerate when transplanted into foreign countries; and it is certain that in no part of the world is there so much attention paid to their breeding and management. This, indeed, is not a matter of wonder, when we consider that the attachment of the English to the chase is so remarkable, as to be reckoned a trait of the national character. This propensity is so prevalent, that scarcely any price is thought too high for hounds of approved excellence.

These dogs are also trained to hunt the stag; and as a proof of their perseverance and spirit in supporting a long continuance of vigorous exertion, it is sufficient to observe, that a large stag having been turned out of Whinfield park, in Westmorland, was pursued until the whole pack was thrown out, except two staunch dogs, which continued the chase. The stag returned to the park, made his last effort in leaping over the wall, and at the moment he had accomplished it, dropped down dead. The foremost of the two hounds also reached the wall, but being too much ex-

hausted, it lay down and immediately expired: the other, unable any longer to continue the pursuit, fell down dead within a small distance of the place. This is perhaps the longest chace recorded in the annals of stag-hunting. They advanced as far Redkirk, near Annan, in Scotland, distant from Whinfield park forty-six miles by the post-road, so that the circuitous route they might be supposed to take could scarcely be less than a hundred and twenty miles. The horns of this stag, which were the largest ever seen in that part of the country, were affixed to a large tree in the park, in commemoration of this extraordinary chace.

Many other kinds of dogs are used in the sports of the field, and contribute to the innocent and healthful amusements of country gentlemen. Of these we shall observe

THE ENGLISH SETTER.

This is a handsome and active dog: its use and qualities are well known. Its scent is exquisite, and its sagacity in discovering the various kinds of game, with its caution in approaching them, exhibits a wonderful specimen of animal instinct.

THE SPANISH POINTER

appears, from the etymology of its name, to have originated from Spain, although it is now naturalized in this country, where the greatest attention has been paid to preserve the purity of the breed. It is principally employed in finding partridges, pheasants, &c. either for the gun or the net, and is remarkable for its docility, its aptness for receiving instruction being such, that it may be said to be almost self-taught. In this respect it greatly excels the English pointer, which requires great care and attention in training. A mixed breed between the Spanish and English is now chiefly used by sportsmen, and these are the setting dogs, which seem to be the most esteemed.

THE LARGE WATER SPANIEL

is chiefly used in discovering the haunts of wild ducks, and other water fowl; it is fond of water, and swims well. In its disposition it is docile and obedient: its

form is elegant; its hair beautifully curled; its ears are long, and its aspect is sagacious and pleasing. These dogs are extremely useful in finding birds that have been shot, or disabled, and fetching them out from places which the sportsman cannot conveniently approach. The small water spaniel is of a less size, but resembles the other in form, and is of similar habits and disposition.

THE SPRINGER

is an indefatigable pursuer of its game, and exceedingly active and expert in raising woodcocks and snipes from their haunts in the woods and marshes which they frequent.

Of this kind also seems to be that handsome little animal, known by the appellation of King Charles's dog, the favorite companion of that monarch, who is said to have been generally attended by several of that kind.

Somewhat similar to this, but much smaller, is the shock dog, a diminutive creature, almost lost in the great quantity of hair, which covers it from head to foot.

Descending still farther, we have a variety of small dogs, such as

THE COMFORTER,

an elegant, but snappish and noisy little animal, and averse to the familiarity of strangers. It is chiefly entertained as an attendant of the toilette, or the drawing-room

THE TURNSPIT,

a vigilant and spirited little dog, is now but seldom employed, although its services were of great utility before the ingenuity of mechanical improvements rendered them unnecessary. Before the invention of a better method of working the spit, it was curious to observe the labors of this useful little animal.

THE PUG DOG,

is formed exactly in the same manner as the bull dog, but much smaller, and its tail curls upon its back. It was formerly very common in England, but now the breed begins to be scarce. Mrs. Piozzi informs us,

that she saw great numbers of them at Padua, and that it still maintains its place in the favour of the ladies in that city.

From the mixture of these, and other breeds, we have messets, lap-dogs, dancers, waps, mongrels, and an endless number of varieties and compounds, for which it is difficult to find a name. I shall therefore proceed to a brief description of those kinds which are of greater note and utility.

THE ROUGH WATER DOG,

admits of two varieties, one of a larger, and the other of a smaller size; but they are both remarkable for their long shaggy hair, and their aptness to fetch any thing, especially out of the water. They are web-footed, and swim with great ease; they are fond of water, and are extremely useful in hunting ducks, and other aquatic fowl.

THE NEW ZEALAND DOG,

pretty much resembles the shepherd's cur, and is common in the Society Islands. In those countries the flesh of their dogs constitutes the principal part of the animal food used by the inhabitants. However disagreeable it may appear to us, dog's flesh was a viand on which the Greeks and Romans did not disdain to feed; and Europeans, who have been able to overcome their prejudices, have tasted the flesh of these animals, and found it not unpalatable. Prejudice, my dear Sir, in many cases, warps our minds more than we imagine, or perhaps are willing to believe.

THE NEWFOUNDLAND DOG,

is one of the largest, as well as the most sagacious and useful animals of the canine race. The dimensions of one now or lately kept at Eslington, in Northumberland, the seat of Sir H. G. Liddell, Bart. were, according to Mr. Bewick, as follow: from the nose to the end of the tail, six feet two inches; the length of the tail, one foot ten inches; from one fore foot over the shoulders to the other, five feet seven inches; girth behind the shoulders, three feet two inches; and round the upper part of the fore leg, nine inches and

a half. It was very fond of fish, and would eat it raw out of the nets. It was web-footed, could swim and dive extremely well, and bring up any thing from the bottom of the water. The extraordinary sagacity of these dogs, joined to their attachment to their masters, renders them, in certain situations, highly valuable, as will appear from the two following well authenticated anecdotes:

A ship belonging to Newcastle, being wrecked near Yarmouth in a severe storm A. D. 1789, and all the crew lost, a Newfoundland dog alone escaped to land, bringing the captain's pocket-book in his mouth. He landed amidst a crowd of people, many of whom, in vain, endeavoured to take it from him. The sagacious animal, as if sensible of the importance of the charge, which had probably been delivered to him by his perishing master, at length leaped fawningly against the breast of a man who had attracted his notice among the crowd, and delivered to him the book. The dog immediately returned to the beach, and watched with great attention for every thing that came a-shore from the wrecked vessel, seizing every thing that came up, and endeavouring to bring it safe to land.

As another instance of the docility and sagacity of these animals, Mr. Bewick relates, that a gentleman walking by the side of the river Tyne, and observing on the opposite side a child fall into the water, gave notice to his dog, which immediately jumped in, swam over, and catching hold of the child with his mouth, brought it safe to land.

In the country from whence these dogs originally were brought, and from which they derive their name, they are extremely useful. Three or four of them yoked to a sledge, will draw for several miles two or three hundred weight of wood, without any driver or conductor, and after delivering their loads, regularly return. The Newfoundland dog is indeed a most valuable creature, and we cannot contemplate his astonishing sagacity without admiring the wonderful works of the Creator, displayed in the various modifications of animal instinct.

THE BLOOD HOUND

is, of all the canine race, the most beautifully formed, and superior to almost every other kind in sagacity. They are generally of a brown, or reddish colour, and seldom bark. These dogs were formerly much used in several parts of this country that were infested with robbers and murderers, especially on the frontiers between England and Scotland; and their exquisite scent and wonderful sagacity in tracing the delinquent, are finely depicted by Somerville.

“ Soon the sagacious brute, his curling tail
Flourish’d in air, low bending plies around
His busy nose, the steaming vapour snuffs
Inquisitive, nor leaves one turf untried,
Till conscious of the recent stains, his heart
Beats quick: his snuffing nose, his active tail,
Attest his joy: then with deep opening mouth,
That makes the welkin tremble, he proclaims
Th’ audacious felon.”

For these purposes the blood hound is happily no longer necessary; and as its present use is chiefly confined to the recovery of deer, that have escaped, after being wounded by a shot, the breed has become much less numerous than it was in former times.

These considerations, while they excite our astonishment at the wonderful instincts with which the Creator has endowed the animal race, must at the same time inspire us with gratitude for the favors conferred on us by his gracious Providence in allotting to us our period of existence in an age of civilization, and in a country where a well-regulated government, by the equitable administration of laws, provides for individual security.

I cannot dismiss this subject, without mentioning a custom established in several convents situated among the Alpine mountains, which does honour to human nature. In these sequestered and uninhabited tracks, travellers inform us that a breed of dogs are trained

to go in search of persons who have lost their way in those unfrequented regions. They are every morning sent out with an apparatus fastened to their collars, containing refreshments, and written directions to the travellers to follow these sagacious animals to the convent, where they are hospitably entertained. By this singular and humane practice, we are assured that many lives are frequently preserved.

In all the Mahometan countries, dogs are excluded from the habitations of men; while cats, on the other hand, are held in the highest esteem, and indulgently treated in every family. The dogs, therefore, wander about at random in the villages, or streets of great cities, without any owner. The Mahometans, however, are remarkable for their humanity to the brute creation; and if they have an abhorrence for these animals, they at least refrain from doing them any injury, and feed them with offals of victuals, which they throw to them into the street. This humanity is, indeed, carried to a very great height in some places, especially in Egypt, where dogs are perhaps more numerous than in any other part of the world, and exceedingly useful in destroying a variety of vermin, and devouring the carrion which, in so sultry a climate, soon putrifies. A certain portion of provision is sometimes given them at the public expence; and instances have been met with of wealthy individuals, who have by will bequeathed a sum of money to be appropriated to the support of these animals.

Although neither the utility nor agreeable qualifications of the dog can be called in question, it must be acknowledged that, to these it unites some mischievous propensities. If we consider the numberless misfortunes caused by dogs in every part of this island, and that there are many country villages through which a person can scarcely either walk or ride in safety, unless he take great care to avoid being lacerated by their teeth, or thrown from his horse in consequence of their barking; as well as the dreadful effects of canine madness, of which every year fur-

nishes fatal instances, we cannot but think that these animals are somewhat too numerous.

I am,

Dear Sir, &c.

LETTER XXXI.

"By wintry famine rous'd, from all the track
Of horrid mountains, which the shining Alps
And weary Appenines and Pyrenées,
Branch out stupendous into distant lands;
Cruel as death and hungry as the grave,
Burning for blood! boney, and gaunt and grim,
Assembling wolves in raging troops descend."

THOMSON.

DEAR SIR,

FROM contemplating the varied utility of the dog, his instinctive sagacity, his firm attachment and pleasing qualities, which endear him to man, I must now call your attention to an animal, which, in its exterior form and internal structure, exactly resembles the canine race, but possesses none of its agreeable dispositions, or useful propensities.

THE WOLF

has, in all ages, been much detested, and is universally considered as the most savage enemy of mankind that exists in the animal creation.

The appetite of the wolf is excessively voracious. Although naturally somewhat timid, it becomes, when pressed with hunger, courageous from necessity, and braves every danger.

In countries where wolves are numerous, whole droves come down from the mountains, or out of the woods, and join in the work of general devastation. They attack the sheep-folds, enter the villages, and carry off sheep, lambs, hogs, calves, and even dogs; for at such times every kind of animal food is equally agreeable. The horse and the ox, the only tame animals that can make any resistance against these destroyers,

are frequently overpowered by their numbers and their incessant attacks. Even man himself, on these occasions, falls a victim to their rapacity. They are seldom driven back until many of them be killed; and when obliged to retreat, soon return to the charge; for when their necessities are urgent they become infuriate, and instead of being intimidated by opposition, will rush upon certain destruction. They are particularly fond of human flesh, and if they were sufficiently powerful, would probably eat no other. Those that have once tasted it, ever after particularly seek to attack mankind; and choose to fall on the shepherd in preference to the flock.

About the year 1764, an animal of this kind committed the most dreadful ravages in some particular districts of Languedoc, and soon became the terror of the whole country. According to the accounts given in the Paris Gazette, he was known to have killed twenty persons, chiefly women and children.

The wolf is, of all animals, one of the most difficult to conquer in the chase; and in the forests of Germany, and other countries where they are yet numerous, the following are the methods of hunting them.

In some sequestered part they hang a piece of carrion on the branch of a tree, having previously laid a train, by leaving at proper intervals small pieces of putrid flesh which the wolves, having an exquisite scent, can smell at a great distance. The hunters then wait till it be dark, and with great circumspection approach the place, where they often find two or three wolves assembled, leaping up and endeavouring to catch the bait; and while the animals are thus busily employed, they dispatch them with their fire-arms.

Another method is to take them in strong nets, into which they are driven by the hunters, who surround a large tract of land, and with drums, horns, and other instruments, accompanied with loud shouts from a large company that is generally assembled on the occasion, drive them into the entrance of the nets,

where they are entangled and easily dispatched. Sometimes they are taken in pit-falls, being allured by a bait.

It is remarkable, that as soon as the wolf finds himself ensnared, and sees no possibility of escape, his courage entirely forsakes him, and he is for some time so stupified with fear, that he may be either killed or taken alive, without difficulty; and at that moment one may muzzle him, and lead him along like a dog; his consternation seeming to extinguish his ferocity and resentment.

Wolves are found with some variety, in most countries of the old and the new continent.

I have already mentioned that the wolf and the dog, although extremely opposite in disposition and habits, resemble each other in form; it is also proper to observe, that in size there is not much difference, the wolf being somewhat taller than the largest greyhound; but he is so far superior in strength, as to be able to carry away a sheep in his mouth. His breath is very offensive, his bite difficult to cure, and his aspect ferocious.

Having endeavoured to entertain you with a display of the habits and disposition of the most destructive of all animals of prey, I shall now, my dear Sir, call your attention to those of a creature which has always been as famous for his artifices, as the wolf has been for his cruelty.

THE FOX

is an animal well known in most countries, and common in every part of Great Britain. All the keepers of poultry are well acquainted with his depredations, of which at one time or another he gives them a specimen; for he is not less artful in attacking the hen-roost, than the wolf is determined in assaulting the sheep-fold.

Hunting the fox is a healthful exercise, and constitutes one of the favorite diversions of the gentlemen of this kingdom. There is perhaps no part of the world where it is pursued with equal ardour and intrepidity. Both our dogs and our horses are superior

to those of every other country for this kind of chase, and yet they have sometimes, especially the latter, fallen victims to the ardour and length of the pursuit, which has in some instances continued from forty to fifty miles without intermission, and sometimes at full speed. One of the most celebrated chases recorded in the annals of fox-hunting, is that of the noted old fox Cæsar, started from Ayrcyholme, in the county of Durham, by Mr. C. Turner's hounds. The length of this chase was above fifty miles; and Mr. Bewick says, that Mr. Turner tired three horses; and that no more than three dogs continued the pursuit when he thought proper to call them off in the evening.

The moment that a fox finds himself pursued, he flies toward some of his holes; but these being always stopped up before the chase begins, he has no other resource than his speed and his cunning. He does not double like the hare, but continues his course straight forward, with great vigour and perseverance. A constant chase has sometimes been thus kept up for seven or eight hours together, or even for a longer time.

The scent which the fox leaves behind him being exceeding strong, he appears sensible of that circumstance, and uses every artifice to bewilder the dogs, and throw them out of their track. He generally takes advantage of the wind, and often crosses rivers, swims down small streams, or runs along the top of a wall, or an artificial hedge, in order to interrupt the continuity of the scent, and puzzle the dogs; and his artful contrivances often succeed so well, as to ensure its safety. His urine is so offensive to the dogs, that it sometimes proves the means of facilitating his escape. If he finds himself, in spite of all his shifts, at last overtaken, he defends himself with obstinacy until he is torn in pieces.

The fox generally fixes his residence at the edge of a wood not far removed from some village or hamlet, where he can listen with rapture to the crowing of a cock, the cackling of poultry, and the gabbling of geese; all this is delightful music in his ears. He

soon contrives an opportunity to pay them a visit, and begins by levelling all without distinction. He then carries off a part of the spoil, hides it at some convenient distance, and returns for another load. Taking off another fowl in the same manner, he hides that also, but seldom in the same place: and this method he pursues until the approach of day, or the noise of the family, warn him to retire. He puts in practice the same arts when he finds birds entangled in springs laid for them by the fowler, with whom he takes care to be before-hand, he is equally active in seizing young hares and rabbits, and in discovering the nests of the quail, the partridge, and the pheasant. When better food is deficient, he devours rats, mice, and almost every kind of vermin; and even the hedge-hog, notwithstanding its prickles, is not secure against his attacks. No creature, but such as are too strong for him, can escape this universal glutton. His depredations are not limited to the search of animal food; for he attacks the wasp and the bee for the sake of their honey; and, although the whole swarm sometimes flies out and fastens on him, he soon gets rid of the assailants by rolling himself on the ground. He then returns to the charge, and at the last, he carries his point. Foxes are also extremely fond of grapes, and do much damage in vineyards.

The black fox is valuable for his fur, which in Russia is esteemed superior to that of the finest sable. A single-skin is sold for the enormous price of four hundred rubles, or between seventy and eighty pounds sterling.

The cross fox, which derives its name from a black mark which passes across the shoulders, and another along the back to the tail, is a native of the cold parts of both the old and the new continents; its fur is very valuable, being extremely thick and soft. Great numbers of these skins are imported from Canada.

The corsac fox is common in the deserts of Tartary beyond the Yaick river. In summer its colour is a pale yellow, except on the throat, which is white. In

winter, it is grey, and the end of its tail is black. It is smaller than the common fox, and its hair is soft and downy.

It lives in holes in the ground and is hunted by the Tartars with falcons and greyhounds. Forty or fifty of these foxes are taken annually, and their skins sold to the Russians, at the rate of forty copees, or about twenty-pence each. Great numbers of them are sent into Turkey. The natives use their skins instead of money.

Thus, my dear Sir, you have in this, as well as in some other animals, an exhibition of its various uses, and a display of the multifarious wisdom of the Creator, who has not ordained it solely as a depredator, nor confined its utility to the amusement of the human species, but also rendered it highly serviceable to man as an article of commerce, and conducive to the intercourse carried on between nations.

I am, dear Sir,

Your's, &c.

LETTER XXXII.

“ ——— beneath the shining waste
The furry nations harbour; tipt with jet,
Fair ermines, spotless as the snows they press;
Sables of glossy black; and dark embrown'd,
Or beauteous freak'd with many a mingled hue,
Thousands besides, the costly pride of courts.”

THOMSON.

DEAR SIR,

THE reflections on the wise and beneficent dispensations of Providence, in accommodating the animal creation to the use of the human species, with which the subject naturally led me to conclude my last letter, induce me to continue the display of Divine wisdom and goodness, in giving you a concise description of a species of small, but exceedingly valuable animals, which are in some countries of extraordinary importance, when considered in a commercial point

of view. These are principally the pine weasel, the martin, the sable, and the ermine, which are all included in the weasel kind, which I shall next describe. In the mean while you will not be displeased to contemplate in one view those particular species which are so distinguished by the richness of their furs; and while they contribute a valuable article of commerce, furnish mankind with an opportunity of observing the wisely adapted beneficence of the Creator, in giving to these animals a covering, which, after having protected them from the rigors of a northern climate, serves as an article of utility, as well as of ornament to man.

THE PINE WEASEL

is found in Great Britain, but the species is not very numerous. It inhabits large forests, especially where the pine tree abounds, on the tops of which it chiefly feeds. It is found in the greatest numbers in the northern parts of the old and the new continent: North America, especially abounds with these animals, and from thence prodigious numbers of their skins are imported. The annual importation from Canada has been known to amount to thirty thousand skins, and about half that number from Hudson's Bay.

THE MARTIN

is the most beautiful of the weasel kind, and more common in England than the last described animal. It lives in woods, and breeds in hollow trees, and produces five or six young at a time.

The martin, when taken young, is easily tamed, and soon becomes exceedingly tractable and playful, but is always ready to take advantage of any opportunity to make its escape, and flee to the woods, the residence to which nature has given it the strongest propensity. The food of this animal is the same of all the weasel kind. It is extremely fond of honey, and sometimes feeds on grain.

M. de Buffon informs us, that a martin which he had tamed, sometimes slept two days successively, and at other times remained as long awake; and that

in preparing for sleep, it always folded itself up in a round form, and covered its tail with his head. It made its escape two or three times, and returned of its own accord, but at last entirely absconded.

The martin is about a foot and a half in length; the body is covered with a thick fur, of a darkish brown colour; its head is small, and elegantly formed, and its eyes are lively; its tail is long, and bushy at the end; its ears broad. Its throat and breast are white; its belly a pale brown; its feet are broad, and its claws large and sharp, being well adapted for climbing trees. It is very active, and its motions are quick and lively. The fur has an agreeable musky smell, and is held in high estimation.

The difference between the martin and the pine weasel consists chiefly in the colour, the breast of the latter being yellow, and the body of a much darker brown than that of the former. The fur of the pine weasel is also superior in fineness, beauty, and value.

THE ERMINE, OR STOAT.

This animal, being brown in the summer, is called the stoat. In the winter it becomes perfectly white, except the end of the tail, which is black, and invariably, retains that colour. In this season it acquires the name of the ermine, and its fur is very valuable. It abounds in Norway, Lapland, Russia, and Siberia, and is also very common in Kamtschatka. In that country and Siberia it is generally taken in traps, baited with flesh. The skins of the ermine are sold in those countries from two to three pounds sterling per hundred.

The natural history of this animal is nearly the same as that of the weasel. Its food is the same, and it also possesses an equal degree of agility. The ermine begins to change colour in November, and in March it resumes its summer vesture.

THE SABLE

is, of all the animals of the weasel kind, the most highly esteemed, and its fur is the most admired. A single skin, although not more than four inches broad, being sometimes sold for fifteen pounds, a circums-

stance which would be incredible, were it not attested by writers, who possessed every means of information on the subject. The fur of the sable possesses this peculiarity, that whatever way it is stroked it lies equally smooth, whereas all others when stroked contrary to the grain, give a sensation of roughness: its colour is a blackish brown, and the darkest are the most admired.

The sable resembles the martin in form, and nearly in size. It seems to be particularly fond of the shade, and inhabits the most impervious woods, where it lives in holes in the earth by the banks of rivers, or under the roots of trees: it possesses great agility, and bounds with velocity from tree to tree. From the singular closeness of its fur, which is extremely well calculated for resisting the water; and from being frequently found in small islands, it is supposed by many naturalists to be amphibious.

This small but valuable quadruped, is a native of Siberia, Kamtschatka, and the islands which lie between that country and Japan; but scarcely any are found in European Russia, and still fewer in Lapland. Siberia, however, is the country where it most abounds, and which furnishes the greatest part of those valuable furs which constitute so lucrative a branch of Russian commerce. It is therefore in the immense forests of those desolate regions that the business of sable hunting is chiefly carried on. This is the employment of soldiers sent thither from Russia for that purpose, as well as of criminals sent into exile. Both are obliged to furnish annually a certain quantity of furs, and for their encouragement they are allowed to share among them all the skins they can procure above the specified number, which, in a fortunate hunting season, amount to a considerable value.

The hunters generally form themselves into small troops, each being directed by a leader of their own choosing. They shoot with a single ball, in order to injure the skin as little as possible; and frequently take them in traps, or kill them with blunt arrows.

The sable hunters frequently endure the utmost extremity of cold, hunger, and fatigue. They penetrate into the inmost recesses of those immense woods and wildernesses, with which the extensive and desolate regions of Siberia abound without any other means of tracing back their way than by marking the trees as they advance. Should they neglect this precaution, or through any inattention deviate from their track, they must inevitably be lost. Sometimes they trace the sables on the new fallen snow, place their nets at the entrance of their holes, and wait two or three days for their coming out, during which time they often suffer extremely from the inclemency of the weather, or the too early consumption of their provisions. In short, the hunting of sables is a serious and perilous employment, carried on in a rigorous climate, at an inclement season, and in the most desolate regions of the earth amidst an aggregate of hardships, of which we can scarcely form any idea. You had never, perhaps, my dear Sir, heard of the sufferings of those, who being exposed to inclement skies, explore the extremities of frozen regions, and procure those elegant decorations which adorn the persons of the opulent.

I have already observed the cross fox, and the corsac fox, the skins of which constitute an important article of trade, and especially the black fox, the skin of which is esteemed the most valuable of all the furs in use. There are also other animals in the northern regions which contribute to the supply of the fur trade, among which may be reckoned the fisher, a native of North America, which very much resembles the sable, and abounds so much on that continent, that sixteen hundred skins have been imported from thence in one season.

In the furs of these animals, of which I have just given you a brief description, Russia carries on an important and lucrative trade with most of the countries of Europe and Asia, but most of all with Turkey and China. Constantinople and Pekin may indeed be considered as the two central points of this traffic,

as the Turks and the Chinese are extremely fond of this article of dress; and in those two capitals of the Turkish and Chinese empires, a greater quantity of furs are used than in any other two cities of the world.

Thus, my dear Sir, you see that the skins of these little quadrupeds constitute an important article in the commerce of a great empire, and one of the sources from which it derives a revenue that enables it to maintain numerous armies, and to stand high in the political scale of nations. This consideration will open to your mind an ample field for reflection on the harmonious plan of nature and Providence. Here, therefore, I will leave you for a while to expatiate at leisure, and conclude with subscribing myself most respectfully,

Dear Sir,

Your's, &c.

LETTER XXIII.

"The artful, cruel, slender weazel, too,
Delights in blood. —————"

SMITH.

"Thus oft th' *ichneumon* on the banks of Nile,
Invades the deadly Aspsi by a wile."

LUCAN.

DEAR SIR,

AS the valuable little quadrupeds, which, in my last letter were, from their commercial importance, considered as a distinct article of natural history, are generally classed with the weazel kind; I shall resume the subject, and endeavour to entertain you with as brief a description as possible, of some other animals of the same race; and shall, in order to bring the subject into a closer view, preface it with an exhibition of a few general characteristics.

ANIMALS OF THE WEAZEL KIND

are distinguished from others of the carnivorous race by the length, slenderness, and the flexibility of their bodies, qualities which enable them to wind into very small crevices, in order to follow their prey. Here,

therefore, as in all the other parts of the creation, we discover a sagacious design in the admirable adaptation of the structure of these animals to their mode of living and obtaining their food.

Another distinction belonging to this race of animals, consists in an unctuous matter, continually exuding from glands placed near the anus, which in some, as the ferret, the weazel, and especially the founmart and the pole-cat, emits an extremely offensive smell; while, in the civet cat, martin, the pine weazel, &c. it affords an agreeable perfume.

All animals of the weazel kind are remarkable for rapine and cruelty; and although the shortness of their legs renders them slow in pursuit of their prey, they supply the deficiency of speed by assiduity and cunning. They always suck the blood of every animal they kill before they eat the flesh.

These are the most striking peculiarities common to the weazel kind; the different species of which so nearly resemble each other, that the view of one will give a very just idea of the rest. The principal difference is in size. They all subsist nearly in the same manner, and on the same kind of food, and prey indiscriminately on almost every quadruped, volatile and reptile, that is weaker and less than themselves. They are particularly destructive to poultry and rabbits, as well as to rats and mice, and are keen devourers of eggs.

THE COMMON WEASEL

does not exceed seven or eight inches in length, from the nose to the tail, and the latter is not above three inches long. The height of this animal is not more than three inches. Notwithstanding its diminutive size, no animal of this class is more destructive in warrens, and among poultry. It is also a great destroyer of eggs, which it sucks with extreme avidity. It is very common in this country, and is well known on account of these kinds of depredations. It will attack a hare, which is often terrified into such a state of imbecility at the sight of this diminutive assailant, as to give itself up to it without resistance. To rats

and mice it is a more dreadful enemy even than the cat, for being slender, it pursues them into their holes. It is, therefore, very useful to the farmer in out-houses and granaries, which in winter it commonly frequents, and effectually clears of all sorts of vermin; but it often counter-balances these benefits by its destruction of eggs, and its depredations in the pigeon-houses, where it creeps into the holes and devours the young ones. It also catches by surprise sparrows, and all kinds of small birds, and always follows wherever rats or mice abound. When it enters the poultry yard, it seldom attacks the cocks or the old hens, but always aims at the young ones, and never fails to suck, or at least to break all the eggs it can meet with. The evening is the time when it commences its depredations.

The weazel seems to have a strong predilection for every thing of a putrid nature. It conveys its food to its hiding place, and seldom eats it until it begins to putrify. It is an untractable little animal, and when confined in a cage, appears in a continual state of agitation. M. de Buffon asserted the impossibility of taming the weazel, but his error has been corrected by experiment: for in some instances it has been rendered as familiar as a dog or a squirrel.

The bite of this diminutive animal is generally fatal, as it always seizes its prey near the head, and fixes its teeth in a vital part. An eagle having seized a weazel, and carried it up into the air, the little captive so far disengaged itself, as to bite its enemy in the throat, which soon brought him to the ground, and thus effected its escape.

THE FOU MART

is an animal not uncommon in this country: in shape it resembles the weazel, but far exceeds it in size, being not less than from fifteen to eighteen inches in length, exclusive of the tail, which is about five or six: it is generally of a deep chocolate colour. Its habits are perfectly similar to those of the weazel, and its mode of living in every respect precisely the same. It is exceedingly fierce and bold. When at-

tacked by a dog, it fastens upon his nose with so keen a bite, as often to compel him to desist; and when unable to conquer, will at least defend itself to the last extremity.

In regard to this animal's mode of procuring subsistence, a curious circumstance was once observed:

During a severe storm, a fougart was traced in the snow from the side of a rivulet to its hole, which was at some distance. As some marks were observed in the snow, for which it was not easy to account, curiosity suggested the expedient of examining the hole, where eleven fine eels were found, which had been the fruits of its nocturnal excursions to the rivulet; and the marks in the snow which had appeared so singular, were then discovered to have been made by the writhings of the eels in the animal's mouth while it was dragging them to its den. It would be a curious subject of investigation to enquire by what means this crafty animal can obtain a booty, the seizure of which appears so difficult.

Although the smell of this quadruped is in the highest degree foetid and disagreeable, yet the skin is used as other furs, and retains no offensive odour. It is, however, far inferior in value to the fur of the sable, the ermine, and other natives of the northern regions. The skins sell from eighteen-pence to half a crown a piece.

THE ICHNEUMON

is an animal which has long attracted the attention of naturalists, and given rise to a number of absurd and ridiculous stories. It has from time immemorial been domesticated in Egypt; where, for its services in destroying the eggs of the crocodile, as well as its young, it was, like several other beneficial animals, worshipped as an emanation of the Deity. From the estimation in which it was held in that country, it has obtained the appellation of the rat of Pharaoh.

The ichneumon is about the size of a cat, and in Egypt is domesticated like that animal, and kept for the same purposes of destroying rats and mice. In shape, it nearly resembles the fougart, or pole-cat:

its fur displays a mixture of tints, white, brown, fawn colour, and silver grey. The domestic is larger than the wild kind, and its colours are more variegated. Its eyes are small and sparkling: its claws are long. When it goes to sleep it rolls itself up like a ball, and sleeps very sound. It frequently sits up like a squirrel, catches any thing that is thrown to it, and will often lie as if dead until its prey come within its reach.

This remarkable animal possesses all the strength and agility of the cat, with a greater propensity to carnage. It attacks the most deadly serpents, and preys on every noxious reptile; it darts with the velocity of an arrow on its object, and seizes it with inevitable certainty. To the crocodile it is a formidable enemy, as it destroys the eggs of that dreadful reptile, and often kills great numbers of the young immediately after their production.

M. de Obsonville tells us of an ichneumon which he had reared, and which was tamer than a cat, and followed him wherever he went. One day he brought to it a small water serpent, being desirous of knowing how far instinct would carry it against a creature with which it was entirely unacquainted. Its first emotion seemed to be a mixture of astonishment and anger. Its hair immediately stood erect: in an instant it slipped behind the reptile, and with extraordinary agility leaped upon its head, seized and crushed it with its teeth. This first essay awakened its natural appetite for blood. It became formidable to the poultry, which it took every opportunity to destroy: it sucked their blood, and ate only a part of their flesh.

Another tribe of this race is distinguished by the agreeableness of their perfume. So prolific is nature, and so various her operations, that imagination itself cannot keep pace with the infinite diversity of her productions. All this variety is ordained for some wise end, which, in a great measure, lies beyond the reach of our investigation. Human research has discovered and explained many of the wonders of nature: future enquiries into her secrets will lead to new

discoveries; but all the recesses of the immense abyss will never be explored: man will never be able to comprehend the whole plan of infinite wisdom.

THE GENET

is one of those odoriferous animals which emits a perfume faintly resembling that of musk. It is somewhat longer than the martin, with a long and slender head, a sharp muzzle, and ears a little pointed. Its hair is soft, smooth and shining, of a tawney red, spotted with black. Along the back it has a mane of long hair, which forms a black line from the head to the tail. The spots on the sides are round and distinct, those on the back nearly run together: its tail is long, and marked with seven or eight rings of black. On the whole it is a beautiful, cleanly creature; and although active and persevering in pursuing its prey, is of a mild and gentle disposition. Its colours are agreeably variegated, and its fur is held in great estimation. The genus does not appear to be extensively diffused, being seldom seen any where except in Turkey and Spain. At Constantinople they have genets in their houses, which are as tame as cats, and effectually expel rats, mice, and all other noxious vermin.

THE CIVET

produces a perfume of much stronger quality than that of the genet, and affords a far greater quantity: in size it is also superior to that animal. This is indeed the largest of all the weazel kind. Its teeth are strong and sharp, but its claws somewhat weak. It is active and nimble, leaps like a cat, and lives in the same manner, and on the same kinds of food as the weazel: like that, and most other carnivorous animals, it hunts its prey chiefly in the dark. It is naturally wild, and somewhat ferocious, but when tamed becomes tolerably tractable.

The civet is originally a native of warm countries, but lives and thrives tolerably well in temperate, and even in cold climates, if it be well protected from the weather; and in Holland many are kept for the sake of their perfume, which is contained in a pouch near

the tail, whence it is drawn two or three times a week.

The very idea of animal perfumes appears offensive to a delicate mind; but although this in particular is in the present age growing out of fashion, it was formerly very much esteemed, and sold as high as fifty shillings per ounce. The quantity of perfume which the civet yields depends principally on the health of the animal, and the nutritious quality of its food. The ancients were well acquainted with its perfume, and ascribed to it certain fabulous powers; it is so strong, that it is impossible to bear any considerable quantity in a room; and no person could support the scent of the animal in a place not admitting a free circulation of air. This perfume, however, is generally esteemed more agreeable than musk; and industry, taking advantage of the caprice of taste, has contrived to make it a lucrative article of commerce.

Several other animals of the weazel kind have been observed by travellers, and described by naturalists; but as I would neither embarrass your memory by a tedious detail of minutiae, nor exhaust your patience by the length of my letter, I shall hasten to its conclusion, by giving you a brief description of the racoon and the badger.

THE RACCOON

is common in many warm countries, particularly in several parts of the new continent. It also inhabits the mountains of Jamaica, whence numbers descend into the plantations, and make great havoc among the sugar canes, of which they are remarkably fond. They frequently do incredible mischief in one night's excursion. The planters devise various methods of destroying them, but they are so numerous as to render their extirpation impossible, and it is exceedingly difficult to prevent their depredations.

The racoon possesses great agility: by the help of its claws, which are extremely sharp, it climbs trees with great ease. When tamed, it is good-natured and sportive, but busy and inquisitive as a monkey. It





Raccoon.



Badger.

examines every thing with its paws, and makes use of them as hands to lay hold of every thing that is given it, as well as to carry victuals to its mouth. It sits up to eat, and is extremely fond of sweet things; but still more of strong liquors, with which, when it has an opportunity, it will get completely intoxicated. It has all the cunning of the fox, is very destructive to poultry, and will eat all sorts of grain, fruits, and roots. It delights in hunting spiders, devours all kinds of insects, and, when left to range in a garden, will eat grass-hoppers, snails, and worms. It opens oysters with amazing dexterity, and has a peculiar method of dipping in water every thing it intends to eat. Indeed, it will seldom taste bread unless it be well soaked. It is familiar and caressing, and leaps upon those it is fond of, moving with great agility.

The head of the racoon resembles that of a fox, its body is thick and short, covered with long hair, black at the ends, but grey underneath. Its tail is long and bushy, and marked with alternate rings of black and white: its skin is the most valuable part of this animal, and is reckoned next to the beaver for the manufacture of hats.

THE BADGER

is a very inoffensive animal; and although nature has furnished it with offensive weapons of the most formidable kind, it never uses them but for the purposes of defence. When attacked, however, it employs all its powers of resistance, and defends itself with the most desperate obstinacy.

The badger is about two feet and a half long from the head to the insertion of the tail: it is of a dirty grey colour; the legs, which are black, are very thick, strong and short: it has five toes on each foot, those on the fore foot are armed with sharp claws well adapted for digging its subterraneous habitations. It is a very cleanly creature, and never defiles its hole with ordure. Its different parts are converted to various uses. Its flesh, although not delicious, is not an unwholesome, nor even a very unpalatable food; and the hind quarters, especially when made into hams;

and well cured, are by some esteemed not inferior to bacon. Its skin, however, is the most useful part, as it is made into coarse furs, collars for dogs, horse trappings, and divers other articles. Its hair is also used for making painters' brushes, so that the different parts of this little animal are convertible to a variety of purposes, and serve to shew the comprehensive plan and beneficial designs of the Author of Nature.

With every sentiment of affection,

I am, dear Sir,

Your's, &c.

LETTER XXXIV.

"There through the piny forest half absorpt,
Rough tenant of the shades, the shapeless bear,
With dangling ice all horrid, stalks forlorn:
Slow pac'd, and sourer as the storms increase,
He makes his bed beneath th' inclement drift;
And with stern patience, scorning weak complaint
Hardens his heart against assailing want.

THOMSON.

DEAR SIR,

I SHALL, in this epistle, entertain you with a view of a surly and formidable race of animals, which, however arranged by systematic writers, evidently constitute a distinct species, being evidently distinguished both by their exterior conformation, and many of their propensities and habits, from all other quadrupeds of the carnivorous class.

THE BEAR

is an animal generally known, and yet various differences and contradictions exist among the writers of natural history concerning this subject, which can have originated only from the circumstance of not rightly distinguishing the different species.

The three principal varieties of the bear kind, are the brown, the black, and the white, or great polar bear: the first is an inhabitant of almost every climate; the black bear is chiefly found in the extensive



Bear.



Porcupine.



forests with which the northern regions of Europe and America abound.

The bear is a solitary, savage, and ferocious animal; he chuses his residence in the most unfrequented deserts, and makes his den in the most dangerous and inaccessible precipices of mountains, where silence and solitude reign. For this purpose, he commonly searches out some natural cavern, or some hollow tree of an enormous size, which it is not very difficult to find in the immense forests of the hyperborean regions. About the end of autumn, at which time the bear is exceedingly fat, he retires to this asylum, and remains during some weeks in a state of total inactivity and abstinence from food. This animal is not, however, like some others, totally deprived of sensation during that interval, but seems to subsist on the former exuberance of his flesh, without feeling the calls of hunger until the superabundant fat which he had acquired in the summer season begins to be considerably wasted.

In the spring the old bears come out from their retreats, lean, and almost famished with confinement and abstinence. They then ransack every place for food, climb trees, and devour the fruit. They descend the highest trees with surprising agility: with one paw they hold themselves fast to the branches, and with the other they gather the fruit. They are remarkably fond of honey, for which they seek with great avidity and cunning, and will encounter any difficulties to obtain it.

The bear is easily irritated, and his resentment is always furious, and often capricious. When tame, he appears mild and obedient, but never ought to be too far trusted. He may be taught to walk upright, to dance and play many curious pranks; and the multitude are highly entertained with the clumsy motions of this rugged and unwieldy creature. The young bears shew a considerable degree of docility in acquiring these accomplishments; the old ones, however, will not submit to this kind of education, but manifest the most ferocious resentment against any attempt to subject them to discipline.

Bears are found in most countries whence an increased population has not expelled them: but they seem to prefer a cold, or at least a temperate climate. The Romans exhibited numbers of them in their public spectacles. They were once common in this island, and were included in the ancient laws respecting beasts of chace. Long after their extirpation they were imported for the inhuman purpose of baiting them, and it is much to be regretted that this cruel diversion is still used in many parts of this enlightened kingdom. It is much to be wished that every exhibition of this kind were prohibited under severe penalties, that so Englishmen might not be reproached with delighting in amusements disgraceful to human nature.

Every trait of humane and generous feeling displayed by illustrious characters, reflects honour not only on themselves, but also on the nation which their virtues serve to adorn.

A very fine bear having some years ago been presented to the Prince of Wales, was kept in the Tower. By the carelessness of the servant, the door of his den had been left open, and the keeper's wife happening to go across the room, the animal flew out, seized the woman, threw her down, and fastened on her neck, which he bit, and without offering any further violence, lay upon her, sucking her blood. Resistance being in vain, she must have inevitably perished, had not her husband fortunately discovered her situation. By a sudden and well aimed blow, he obliged the bear to quit his hold and retire to his den, which he did with great reluctance, and not without making a second attempt to reach the woman, who was almost dead with fear and the loss of blood. It is remarkable, that whenever the animal happened to see her afterwards, it growled, and made violent efforts to get to her. His royal highness, upon hearing of the circumstance, immediately ordered the bear to be killed. You will find this fact related in Mr. Bewick's celebrated history of quadrupeds, and it reflects greater honor on his royal

highness's character than could ever be derived from the sanguinary successes of a Genghis Khan, or a Tamerlane.

If animals of the ferocious kind be cruel and sanguinary, man, however, to the disgrace of his nature, sometimes strives to surpass them in ferocity and cruelty. Humanity must shudder at the excessive barbarities too often exercised on the bear, in teaching it to walk upright, and to regulate its motions to the sound of certain instruments. Its eyes are sometimes put out, and an iron ring put through the cartilage of its nose, to lead it by; with a variety of other kinds of ill treatment. Some are taught to dance, by having their feet placed on hot iron plates, and playing to them while in that uneasy situation. To every feeling mind it is shocking to reflect that such cruelties should be exercised on the brute creation, for the sake of obtaining paltry contributions from an unthinking crowd, which is gratified by such exhibitions. Was it for this purpose that the benevolent Author of Nature has created these animals, and endowed them with life and sensation? What account shall man render to the Sovereign of the universe, for this wanton and cruel abuse of those creatures which his hands have made?

THE POLAR, OR GREAT WHITE BEAR

is a species very different from the common bear, and far exceeds it in size, some of them being above thirteen-feet long, with limbs of a prodigious size and strength. Its hair is of a yellowish white, long and rough: its ears are short and round, and its teeth large.

The ferocity and undaunted courage of this animal has been remarked by all who have visited the frozen regions, where it makes its abode.

The crew of a boat belonging to a ship in the whale fishery, shot at one of these creatures at some distance, and wounded it. The bear, far from being intimidated, set up the most dreadful yells, and ran along the ice directly for the boat. Before it could reach it, a second shot was fired, by which it was

again wounded. This served only to increase its fury. It presently swam to the boat, and, attempting to board, reached its fore paw upon the gunnel; but one of the crew having a hatchet, cut it off. The animal, however, still continued to swim after them until they arrived at the ship, although several shots were fired, which also took effect. But on reaching the ship, it immediately ascended the deck. The crew having then fled into the shrouds, it was pursuing them thither, when a shot at last laid it dead. Such an instance of ferocious resolution is not, perhaps, to be found in any other of the quadruped race. It will not, indeed, hesitate to attack a party of armed men, and has scarcely ever been known to retreat at the sight of any danger.

The attachment of this animal to its young is not less remarkable than its determined courage. The white bear will rather die than desert its offspring. When wounded and dying, it embraces its cubs to the very last moment of its existence, and when by any means deprived of them, bemoans the loss with the most piteous cries.

The sagacity evinced by these quadrupeds in searching for prey, is particularly worthy of attention. The honorable Robert Boyle informs us, upon the authority of a friend, that the smell of the white bears about Greenland, notwithstanding the severity of the climate, is extremely acute; and that sometimes when the fishermen have left the carcass of a whale floating on the sea, three or four leagues from the shore, whence it could not be seen, these animals will stand at the brink of the water, and, raising themselves on their hind legs, loudly snuff in the air, and ~~direct~~ it, as it were, against their snouts with their fore-paws, and when satisfied what point the odour comes from, they will plunge into the sea, and swim directly towards the carcass.

The flesh of this animal is white, and tastes like mutton: its fat is melted into train oil; and from the feet an oil is extracted, which is found of considerable use in medicine. Thus, my dear Sir, you see that

Providence has ordained that the white bear, although placed in the icy solitudes of the polar regions, should yield its tribute of utility to human industry and enterprise.

They feed on fish, seals, and the carcasses of whales. They sometimes attack the morse, with which they have terrible conflicts, but the large teeth of that animal give it so great an advantage, that the bear is often worsted.

THE PORCUPINE,

formidable in appearance, is, in disposition, perfectly inoffensive; it lives on fruits, roots, and different kinds of vegetables; sleeps in the day, and feeds in the night.

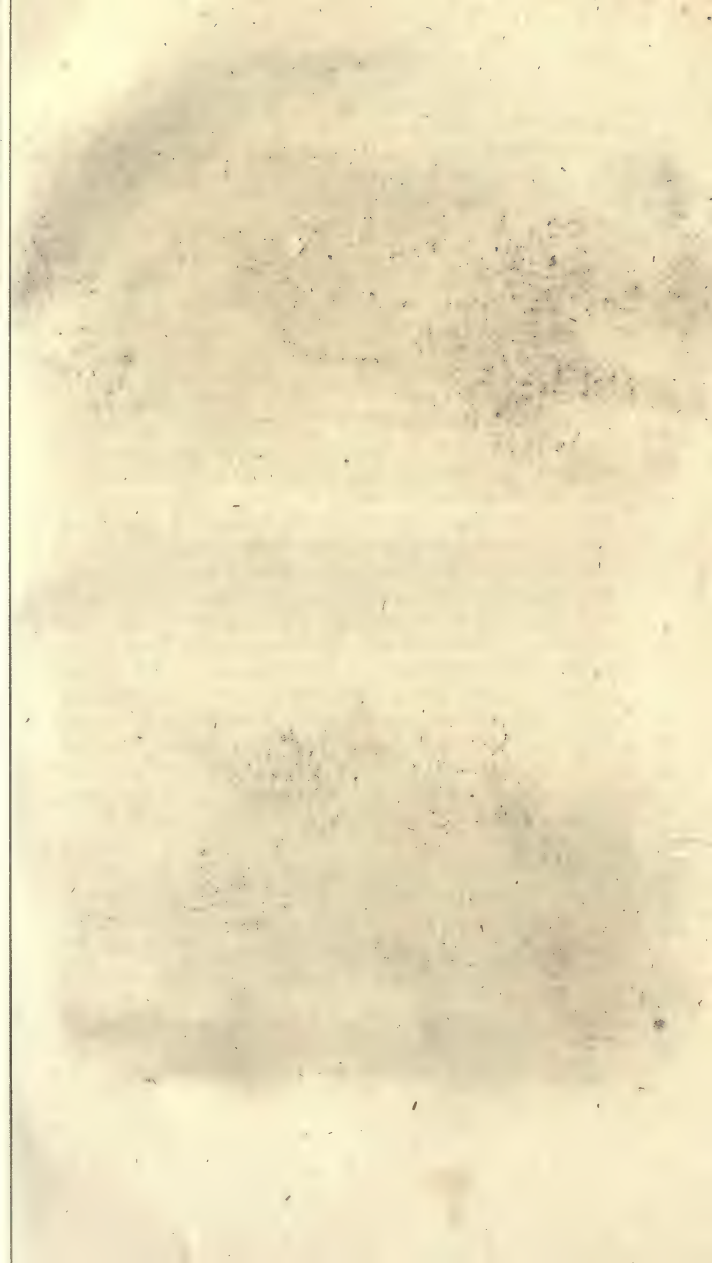
Some naturalists have asserted, that the porcupine discharges its quills against its assailants; but this opinion is now universally known to be erroneous. Although this animal does not possess, in regard to offensive war, the extraordinary advantages which error has supposed, it is sufficiently armed to resist the attacks of animals much stronger than itself. When irritated or alarmed, it raises its quills, which form an effectual safeguard to its body, so that few animals are capable of injuring it. The largest of its quills are from ten to fifteen inches in length, thickish in the middle, and extremely sharp at the point. Between the quills there grows a kind of thin, black, and bristly hair. The tail is covered with short quills, white and transparent.

A porcupine was for some time kept by the late Sir Ashton Lever, which he frequently turned out on the grass behind his house, to play with a tame hunting leopard and a Newfoundland dog. These animals always began to pursue the porcupine, as soon as they were set at liberty; but when the object of their pursuit found it impossible to escape by flight, he cunningly thrust his head into some corner, and erected his quills, with which his enemies pricked their noses, till at length they quarrelled between themselves, and thus afforded him an opportunity of escaping.

THE HEDGE-HOG

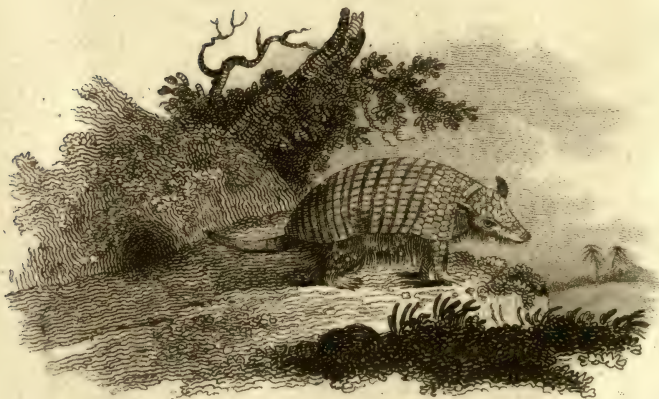
appears to be the porcupine in miniature. It is so generally known, that I shall not trouble you with any description of it. I shall only remark, that it is one of the most inoffensive of animals; and that although nature has provided it with a spinous armour, sufficient to protect it from the attacks of the weasel, the foumart, and other beasts of prey of the smaller kind; it cannot secure it from the cruelty of man, or of dogs trained up to the sport of tearing it in pieces, merely to gratify the barbarous pleasure of seeing a harmless creature endure with astonishing patience the most wanton and unprovoked outrages. The cruelties inflicted on this inoffensive animal for savage pastime, are often such as must make sensibility shudder. Shocking, indeed, must it be to consider that man, weak and mortal himself, and, liable to a thousand misfortunes, should find a barbarous pleasure in torturing with savage cruelty beings, which, like himself, are endowed with life and sensation, and, like himself, are exposed to a variety of physical evils. Although inferior to him in the scale of existence, the consideration of that inferiority ought to excite his compassion, and not to excite him to cruelty; above all, it ought to stimulate his gratitude to the bountiful Giver of all good, for that pre-eminence over the brute creation with which he sees himself endowed.

During the winter these animals wrap themselves up in a nest of moss, leaves, and dried grass; and is sometimes so completely covered with herbage, that it resembles a ball of dried leaves: in this situation it remains perfectly torpid, till revived by the cheering influence of spring. The female produces four or five young ones at a time, which are soon covered with spines, though shorter and weaker than those of the parent animal. It is said that these creatures may be in some degree domesticated; and an instance once occurred in Northumberland, of a hedge-hog performing the duty of a turn-spit at a public inn.





Hedge-Hog.



Armadillo.

THE ARMADILLO

is a curious animal, and, like the tortoise, is covered with a strong shell, or rather a mass of scaly incrustations. To give a minute description of the shells of this quadruped, would be extremely difficult, or rather, impossible, as they are all composed of a number of parts differing greatly from each other in the arrangement of the figures by which they are distinguished. In general, there are two large pieces of shell which cover the shoulders and the rump, between which lie the bands, which are more or less numerous in the different species. These bands, which somewhat resemble those in the tail of a lobster, being flexible, give way to the motions of the animal.

The Indians hunt the armadillo with dogs trained for the purpose. The moment it perceives itself attacked, it flies to its hole, or makes a new one, which it does with great expedition, by means of the strong claws with which its fore feet are armed. If no other chance of escape be left, it draws its head under its shell like a snail, tucks its feet close to its belly, unites the extremities of the head and tail, and, thus closely rolled up, presents to its antagonist a callous ball, on which no impression can be made. In this posture it sometimes effects its escape, by rolling itself over the edge of an abrupt precipice, in which case it generally falls to the bottom, unhurt. The most successful method of catching armadillos, is by snares laid for them in the places which they frequent. They are hunted chiefly for the exquisite delicacy of their flesh. They always burrow deep in the ground, and seldom stir out except in the night, while in search of their food, which consists of roots, fruits, and other vegetables. They are harmless, inoffensive animals and often grow very fat.

Of this kind of animal there are several varieties, all of which are natives of South America, and no species of it has ever been discovered in any part of the old world, although it seems to bear without

any apparent inconveniency, the severity of our climate.

THE SLOTH

is a native of South America; but one species of it, called the unau, has been found in the island of Ceylon. The flesh of both is eaten by the natives of those countries. It is said to belong to the class of ruminating animals.

The sloth lives chiefly in trees, and having ascended one with infinite labour and difficulty, it remains there till it has entirely stripped it, leaving neither fruit, blossom, nor leaf; after which, it is said to devour even the bark. Being unable to descend, it throws itself on the ground, and continues motionless until hunger again compels it to renew its exertions.

Though slow, and apparently almost incapable of motion, the sloth is very strong, tenacious of life, and patient of abstinence. The strength of its legs and feet are so great, that having seized any thing, it is next to impossible to compel it to quit its hold. One of these animals having laid hold of a dog that was let loose upon it, held him so fast at his feet till he perished with hunger.

The sloth is about the size of a fox; it is covered with coarse ill-set hair: its nose is very blunt, its eyes black, its ears small, and its mouth extremely wide, extending almost from ear to ear; its legs are thick and clumsy. Its motions are so slow, that it cannot advance above three yards in an hour: they seem to be made with great efforts, and are always accompanied with the most piteous cries.

Buffon observes of this animal, that when kept in a house it never sleeps on the ground, but always climbs on some post or door, for that purpose. If a pole be held out to it on the ground, it will immediately cling to it; and when the pole is elevated, it will immediately climb to the top. The same naturalist remarks, that the female sloth produces only one young one at a birth, which she frequently carries on her back.

This appears to be almost the only animal to which nature seems, according to our superficial observations and imperfect manner of judging, to have denied a conformation of body and power of action adapted to its wants; but let us not make too hasty a decision in estimating its happiness. A single tree affords it sustenance for a considerable time, and consequently it enjoys plenty without any long search: and as a creature of so imperfect a conformation could not possibly procure water, indulgent nature has kindly taken care that it should feel no inconvenience from the want of that article so necessary to most other animals. This circumstance alone shews, that the well-being of this creature has not been overlooked by the Creator in the immensity of his works. Its plaintive moans, which we consider as expressions of pain, may perhaps be a cry given for its preservation, as all beasts of prey fly from the sound. It may have enjoyments peculiar to itself. We cannot judge of the sensations of this or any other animal; but we are certain that the God of nature has never made any creature for misery.

I am, dear Sir,

Your's, &c.

LETTER XXXV.

" 'Tis instinct that directs the timid hare
To chuse her soft abode. With step reyers'd,
She forms the doubling maze: then, ere the morn
Peeps through the clouds, leaps to her close recess."

THOMSON.

DEAR SIR,

I SHALL at present entertain you with a short letter descriptive of the hare and the rabbit, two gentle and timid animals, which, although troublesome to man, in frequently destroying the fruits of his agricultural labours, are not without their utility in furnishing an excellent viand for the table, as well as a considerable article of commerce. Both these ani-

mals are destitute of every means of defence, and on every side surrounded with enemies; but the Great Author and Preserver of all beings, has, in the wise and good plan of his universal providence, given to one such a variety of means of escape, and to the other so amazing a fecundity, that neither is extirpated.

THE HARE

is an animal so generally known, that a minute description is unnecessary. It is proper, however, to remark, that being furnished with long ears, which are readily moved and directed with facility to every quarter, it is instantaneously warned of the approach of danger; and the largeness and prominency of its eyes, adapted to the perception of objects in every direction, equally contribute to its safety. Its swiftness, also, is such, that it soon leaves its pursuers behind; and its enemies can seize it only by surprise, or by wearying it out with long and persevering pursuit. The hind legs of the hare being much longer than those before, and very strong and muscular, give it a singular facility of running up a hill, an advantage of which, from an instinctive knowledge of its powers, it seldom fails to avail itself.

Thus formed for escape, apprehensive of every danger, and attentive to every alarm, this inoffensive animal might be supposed to live in a state of tolerable security; but every rapacious beast and bird is its enemy; and man, more formidable than all, makes use of every artifice to obtain so delicious an article of food for his table.

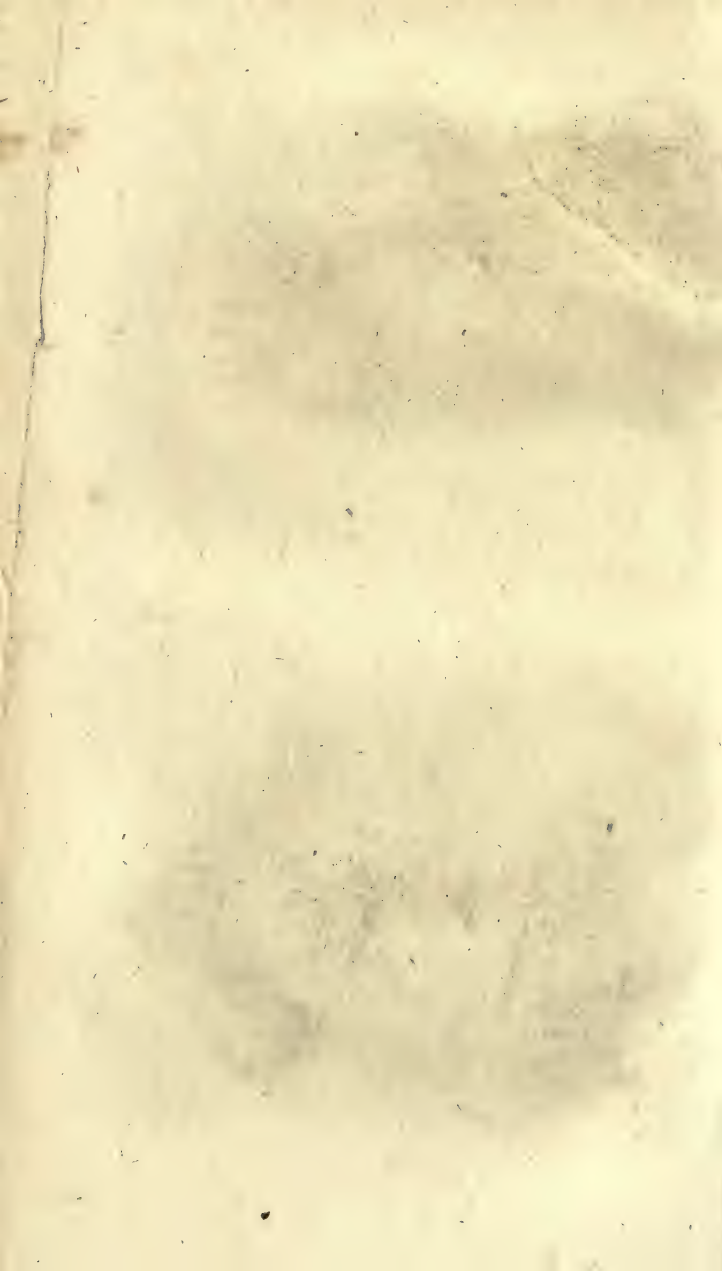
Were I to enumerate the various stratagems which human ingenuity has invented for taking this timid creature, I might also enter into a long detail of its contrivances for evading pursuit. The hare frequently runs to a pool of water, and swims to a cluster of rushes growing in the middle, where it conceals itself from the view of the dogs, or crosses a stream in order to break their scent. It will sometimes run into a sheep fold, and lie down among the sheep, or leap upon an old wall, and hide itself among the ivy, or



Hare.



Rabbit.



weeds growing on the top; and Fouilloux says, that he has seen a hare, which, after having run more than two hours before the dogs, pushed another hare from its seat, and took possession of it, thus concealing itself at the other's risk.

The hare derives a considerable degree of safety from its colour resembling that of stubble, or fallow ground: in some of the northern regions it turns white in winter, and is scarcely distinguishable from the snow, which demonstrates the attention of the Author of Nature to the preservation of his creatures.

Mr. Borlase, in his History of Cornwall, gives an account of a hare which was so completely tamed, as to lie quietly under a chair in a common sitting room, feed from the hand, and, after occasionally regaling in the garden, return to the house, as its proper habitation: its evenings were always spent with a spaniel and a greyhound, which slept quietly on the same hearth, and even permitted the little creature to rest upon their bodies, though both of these animals were remarkably fond of hare-hunting.

The hare is found in most parts of the world. Its flesh was forbidden to the Jews, but was esteemed a great delicacy among the Romans, as it is now at our tables. Among the ancient Britons this animal was held sacred: at this day it is reckoned unclean by the Mahometans. The fur of the hare is of great use in the manufacturing of hats; and many thousands of their skins are annually imported from Russia for this purpose.

The hare is very prolific. The female goes thirty days with young, and produces three or four at a litter, three or four times a year.

THE RABBIT

is an animal so common, and so well known in every part of this kingdom, that any description of its form would be superfluous; it may not, however, be amiss to observe, that although the tame kind assume a variety of colours, the wild are invariably brown.

Notwithstanding the general resemblance which exists between this animal and the hare, their habits

and propensities are very different, as well as their fecundity, and several other distinguishing characteristics; and they also seem to have a natural aversion for each other.

The rabbit lives to the age of nine or ten years. It prefers a warm climate; and in Sweden, and other northern regions, it cannot be reared but in houses. It is common, however, in all the temperate countries of Europe. In Spain they had once become so numerous, and were found so destructive to vegetation, that the inhabitants were obliged to introduce ferrets from Africa, in order to diminish their numbers.

They abound in every part of Great Britain, especially in Cambridgeshire, Norfolk, and Lincolnshire, and on the wolds of Yorkshire; but in many of these parts several warrens are lately converted into sheep pasture, or tillage, and the number of rabbits is consequently diminishing.

The fecundity of the rabbit is astonishing, and exhibits a curious article in the history of animated nature. This little quadruped breeds seven times in the year, and generally produces seven or eight young at a time; whence may be calculated the wonderful and almost incredible increase of which a single pair might in a few years be capable; but as their propagation is rapid, their enemies are also numerous. Foxes, founarts, and almost all animals of the weasel kind, make them their prey, without reckoning the immense numbers taken for the use of man. Indeed, if a considerable reduction did not by various means take place, there is every reason to believe that their numbers would exceed the means of support, and totally consume the whole vegetable produce of the country. In this animal, therefore, as well as in many others, we discover a striking display of the wisdom of the Creator, in so exactly proportioning the measure of fecundity and destruction.

The rabbit is not among the indigenous animals of America; but in many of the West-India islands there are great numbers, which have originated from a stock carried thither from the old continent.

One striking dissimilarity between the habits of this quadruped, and those of the hare, to which, although inferior in size, it bears so visible a resemblance, is, that the former burrows in holes in the ground, while the latter depends on speed for its security. The flesh of the rabbit, as well as that of the hare, is esteemed unclean by the Jews, and the Mahometans, but is considered as a delicacy among Christians; and the fur of the one as well as of the other, constitutes a considerable article in the manufacture of hats. The skins of the rabbits, indeed, constitute no small part of the profits of those who keep warrens. Thus, my dear Sir, you see how wonderfully the Creator has multiplied his blessings, and how much he has rendered this prolific little animal conducive to our conveniency and comfort.

Leaving you for a while to the enjoyment of reflections so pleasing, and so well adapted to excite in your mind sentiments of gratitude to the Author of every good,

I am, dear Sir,
Your's, &c.

LETTER XXXVI.

" Her chariot is an empty hazel nut,
Made by the joiner *squirrel*, or old grub,
Time out of mind the lairies' coach-makers."

SHAKESPEARE.

DEAR SIR,

AS the objects which natural history presents are so exceedingly numerous, and your other pursuits prevent your application entirely to this branch of knowledge, and especially as it is not my design to impose on your memory a burdensome task, which might interfere with the studies necessary for your prof but rather to lead you by the way of an amusement to the delightful contemplation of wisdom, power, and beneficence of the

played in his works, I shall, in pursuance of my original plan, without descending to minutiae, carry you forward to some of the most striking objects of the animal creation; and, in this undertaking, I hope I shall be able to season instruction with pleasure.

I might, indeed, take up your time with elaborate descriptions of the Guinea pig, an animal of diminutive size and inconsiderable utility in comparison of many others; and which, as it is often domesticated among us, you will probably one time or other have an opportunity of observing; as also of the spotted cavy, the agouti, and many others too numerous to examine in detail, most of them natives of South America, or other distant regions, and seldom seen in these parts of the world; but knowing well the value of your time, and the importance of your studies, I shall endeavour to exhibit such objects as are more particularly interesting. I cannot, however, omit to take notice of

THE SQUIRREL,

a beautiful little animal, equally remarkable for the elegance of its form, the liveliness of its disposition, and the agility of its motions. It is gentle and harmless: though naturally wild, it is easily domesticated; and although excessively timid, it soon becomes familiar.

The head, body, tail, and legs, of this elegant little quadruped, are of a bright brown colour; the belly and breast are white, its eyes black, large, and full of vivacity; but its tail, which is long and umbrageous, constitutes its greatest singularity, as well as its principal ornament. It is also not less useful than ornamental; for being sufficiently large and bushy to cover the whole body, it serves as an excellent defence against the inclemencies of the weather. It also greatly assists it in clinging and adhering to trees; and Linnæus, as well as other naturalists, assures us, that in crossing a river, the squirrel places itself upon a piece of bark, and erecting its tail, in order to catch the wind, uses it as a sail, and thus commits itself to the mercy of the waves. It would certainly be both



Squirrel.



Kangaroo.



curious and interesting to be an eye-witness of one of their voyages, and a benevolent heart could not forbear wishing safety and success to the little navigators. The fact, indeed, would appear incredible, were it not attested by such respectable evidence. If, however, it be true, it exhibits a striking specimen of animal instinct, although not more wonderful than many others which are displayed in the brute creation.

The squirrel lives in woods and groves, and makes its nest of dry leaves in the hollows of trees: it seldom descends to the ground, but leaps from tree to tree with astonishing agility. It sits up to eat, and feeds itself with its fore paws. Its food consists of fruits, nuts, acorns, &c. of which it accumulates a plentiful store for its winter provision. In the spring it feeds on young shoots and buds, and is extremely fond of the cones of the fir tree. This beautiful little animal, by its sportive bounds from tree to tree, enlivens the sylvan scene, and merits the benevolent protection of man on account of its docility and innocence. Being naturally fond of warmth, it will, when domesticated, creep into a person's pocket, sleeve, or bosom, with the most perfect confidence and familiarity.

Of this animal zoologists have enumerated a variety of species, some of which are to be met with in almost every country. Among these, are the grey squirrel, the fur of which is very valuable; the black squirrel of Mexico; the Barbary and the palm squirrel; the fat squirrel, which, among the Romans, was esteemed a great delicacy for the table, and which they kept and fed in places constructed for that purpose, and distinguished by the name of *gliraria*, and many others. In conformity, however, to the conciseness of my plan, I shall only observe the

FLYING SQUIRREL,

which is peculiarly distinguished by a membranous continuation of the skin of the sides and belly extending from the fore to the hind feet. By this appendage it is so much assisted in making bounds from

tree to tree, that it frequently springs to the distance of twenty or thirty yards. Its skin is remarkably fine and soft, being covered with a beautiful fur, of a dark colour in some parts, and a lighter in others. Its head is small and elegant. It is mild in its disposition; but, although easily tamed, it is difficult to retain in a state of domestication, and seizes the first opportunity of making its escape. It is less than the common squirrel: it lives in trees, sleeps in the day, but exhibits its activity in the night.

The membranous appendage connecting its legs, being stretched out in the act of leaping, extends the surface of the body, by which it is better supported by the air and the acceleration of its fall is retarded. This gives it the appearance of flying, from which its name has originated.

THE JERBOA

merits particular attention, on account of the allusions made to it in the Scriptures, it being the *Damon Israel*, or *Lamb of Israel* of the Arabs, and is supposed to be the coney of holy writ which was classed among the unclean beasts; our rabbit or coney being unknown in Palestine. It is also the mouse mentioned in the book of the Prophet Isaiah, chap. lvi. verse 17. It is a lively and harmless animal; it lives on vegetables, and burrows in the ground like the rabbit.

The Jerboa is remarkable for the singular construction of its legs, the fore ones being not more than one inch in length, and used not for walking but for conveying victuals to its mouth. The hind legs are naked and like those of a bird, with only three toes on each foot. Its hair is long and soft, reddish on the back, and white on the belly and the breast, with a large black band across the thighs, in the form of a crescent. Its tail is longer than its body and terminates in a black tuft, tipped with white. Its head, very much resembles that of a rabbit; but in size this animal is somewhat less than a rat.

This singular quadruped is chiefly found in *Barbary*, *Egypt* and *Palestine*: there are also some species of it in *Siberia*, *Tartary*, and some other parts of

Asia. It makes its nest of the finest herbage, rolls itself up with its head between its thighs, and during the winter remains in a torpid state without taking any food. When pursued it springs with such agility that its feet scarcely seem to touch the ground. It is easily tamed, appears fond of warmth, and, by wrapping itself up close with hay, it seems to be sensible of the approach of cold weather.

THE KANGAROO

is an animal unknown to the naturalists of former ages, and for the knowledge of which we are indebted to the improvement of navigation, and the discoveries of modern times. It is a native of New Holland, where it was first discovered by Sir Joseph Banks. Its head, neck and shoulders are small, the lower parts of the body much thicker, especially towards the rump. Its ears are large and erect, the end of the nose black, with whiskers on both the upper and lower jaws. Its tail is long and taper, being very thick near the rump, and narrowing to a point. But the most remarkable singularity in this animal is the construction of its legs, in which it resembles the Jerboa. The fore legs are extremely short, and only used for digging in the ground, or carrying its food to its mouth. It moves entirely on its hind legs, which are nearly as long as its whole body. On these it springs with such strength and rapidity as to outstrip the fleetest greyhound, making successive bounds of ten or twelve feet. It leaps from rock to rock in an astonishing manner, and over bushes seven or eight feet high, without apparent effort.

The Kangaroo is generally of an ash colour: it feeds entirely on vegetables and its flesh is wholesome and palatable food. There are two kinds, a larger and a smaller; the largest that has been shot weighed 140lb. and measured in length, from the point of the nose to the rump, four feet, and its tail two feet one inch: the length of the fore legs was one foot, and that of the hind legs two feet eight inches. The smaller kind seldom weighs above 60lb.

This animal is furnished with a pouch in which its

young are fostered; but its astonishing agility under such seeming disadvantages is the most striking circumstance by which it is distinguished and which demonstrates that the Author of Nature can communicate activity and vigor to any conformation of parts.

THE KANGAROO RAT

is a native of the same country and may be regarded as an epitome of the above described animal which it exactly resembles in its construction, and differs from it only in size, being no bigger than a rabbit: it lives on vegetables and burrows in the ground.

It is worthy of observation that the Kangaroo is the only quadruped that is good for food yet discovered in the country of which it is a native; this circumstance, however, may lead us to observe that such is the diffusive goodness of the Creator, and such his providential care in providing for the support of man, that every country yet known produces some supply of animal as well as vegetable sustenance.

As I would that every circumstance adapted to excite sentiments of gratitude to the Giver of all good things should make a deep impression on your mind, I shall conclude by recommending to your attention this important consideration, and at the same time subscribe myself,

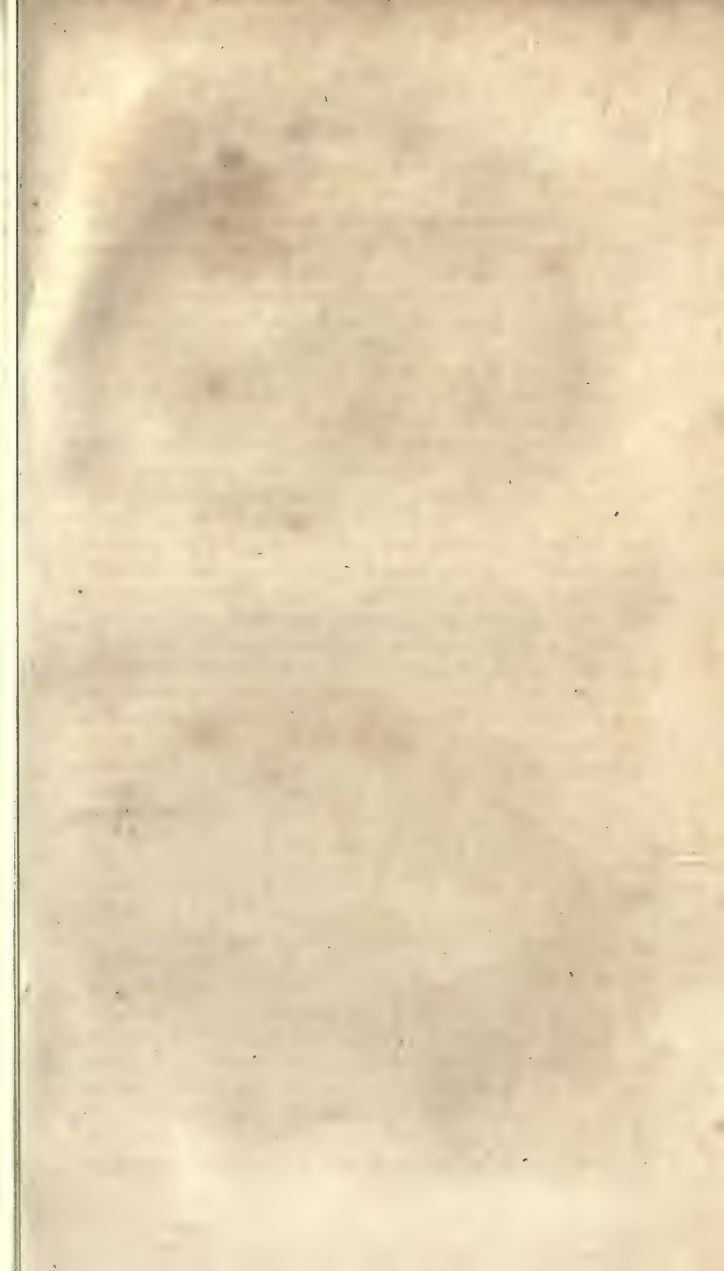
Dear Sir,
Your's, &c.

LETTER XXXVII.

" ————— The savage rat
When tam'd and taught, to gazing crowds is shewn."

DEAR SIR,

I SHALL now make a transition from an agreeable and inoffensive species of animals to another of more noxious propensities, which, notwithstanding their diminutive size, are capable of giving us much trouble, and serve to shew that the Author of Nature can produce inconveniencies as well as benefits to mankind by the slenderest means. Of this truth we may find





L. n.



Mouisc.

sufficient demonstrations in taking a view of the Rat kind.

THE GREAT RAT

is an animal well known in England, although supposed to have come originally from Norway. From whatever country it came, or by whatever means it was introduced, it has been found impossible to expel this formidable invader. Before the arrival of this troublesome stranger this country was infested with the black rat, which was much less injurious than its rival; but the species is now almost extinct, being nearly extirpated by the Norway Rat, which is much superior in strength, voraciousness and ferocity. The latter which is now universally diffused throughout the country, is about nine inches long, of a grey colour, and the throat and belly of a dirty white: its tail is as long as its body, and nearly destitute of hair.

Though small, weak, and contemptible in its appearance, it is a more formidable enemy to mankind than those that possess the greatest strength. No art can counteract its various powers of annoyance, and force is ineffectually opposed to an adversary possessing such a variety of means to baffle its efforts.

The rat is a bold and fierce animal; its bite is keen, and the wound it inflicts painful and difficult to heal. Its rapacity has no bounds, for it preys on every creature which it is able to subdue, and does incalculable mischief among grain and fruits. It refuses scarcely any article of food, and few places are secure from its depredations.

A numerous host of enemies combine for the destruction of this noxious quadruped. Several kinds of dogs pursue rats with eagerness and kill them, although none will eat their flesh. The cat is also one of their formidable adversaries; but the weazel is their most determined enemy, and hunts them with unceasing avidity. The ferret is also employed in the same business: and mankind have employed the various means of traps and poison in order to destroy these troublesome intruders; but no method hitherto discovered has been able to effect their extirpation.

The sagacity of these animals in avoiding the traps and snares laid for them is astonishing and well known; and their various means of eluding danger, together with their amazing fecundity, producing from twelve to eighteen young at one time, render ineffectual the united efforts of such a multitude of enemies as combine for their destruction. Their numbers would indeed increase beyond all power of restraint, but that insatiable voraciousness impels them to devour one another, and the weaker invariably fall a prey to the stronger.

M. St. Pierre informs us that in the Isle of France rats are so extremely numerous that at sun set they may be seen running about in all directions, and frequently destroy a whole crop of corn in a single night. In some of the houses they swarm so prodigiously, that thirty thousand have been killed in a year; they have also subterraneous magazines of corn and fruit, and even climb the trees to devour the young birds.

Kaempfer asserts that the Japanese have a method of taming these rats, and of teaching them a variety of entertaining tricks, which are occasionally exhibited for the amusement of the populace.

It is a singular circumstance in the history of these animals that the skins of such as have been found devoured in their holes have been curiously turned inside out, every part, even to the ends of the toes, being completely inverted.

THE LEMING, OR LAPLAND MARMOT.

This animal presents one of these singular phenomena which to the curious observer of nature, have always appeared particularly striking, and is distinguished from all other quadrupeds by habits peculiar to itself, and for which it puzzles philosophy to account. It is found only in the northern parts of our continent, where immense numbers of these little animals sometimes overspread large tracts of country, especially in Lapland, Sweden, and Norway. Their appearance happens at uncertain periods, but, fortunately for the inhabitants of these countries, not of-

tener than once or twice in twenty years. As the source from whence they originate in such astonishing numbers is yet unexplored by the naturalist, it is no wonder that the ignorant Laplander should seriously believe they are rained from the clouds.

This creature is somewhat less than a rat, and runs very swiftly, although its legs are short and slender. Its head is of a pointed form; and in each jaw it has two cutting teeth, with which it bites very keenly: its eyes are small and its ears short: its fore legs are shorter than the hind ones. The colour of its body and head is tawny, and variegated with large black spots, irregularly arranged; and the belly is white tinged with yellow.

The Leming must be prolific beyond conception; but the most astonishing circumstance of the natural history of these animals is their destructive migrations. Myriads pour down from the mountains, and form an overwhelming troop, which nothing can resist. The disposition of their march is generally in lines, about three feet asunder, and exactly parallel. In this order they advance with as much regularity as a well disciplined army; and it is remarked that their course is always from the N. W. or S. E. They frequently cover the extent of a square mile, travelling in the night. They always halt in the day, and in the evening resume their march. No opposition can stop them, and whatever way their course is directed, neither fire nor water can turn them out of their road. If a lake or a river happen to intercept their progress they instantly take the water, and swim across or perish in the attempt. It seems, indeed, as if they were impelled by some secret impulse which prevents them from ever deviating from their direct route; for if a fire interrupt their course they instantly plunge into the flames; if a well, they dart down into it; if a hay-rick be in their road they eat through it; if a house, they climb over it, and never turn an inch out of their way. If thousands perish, thousands still supply their place, until the whole column be destroyed. Happily for mankind they eat

nothing that is prepared for human subsistence; and if they force their passage through a house they will not touch any thing except such roots or vegetables as they may happen to find in it. If a man or any animal should chance to fall in their way, the little animals are no way discouraged by any disproportion of strength; but fly furiously at their opponent, with a barking noise like that of a young whelp, and nothing can induce them to relinquish the attack.

Wherever they pass they destroy every trace of vegetation, and when subsistence fails, they are said to divide into two different armies, which engage with the most deadly hostility, and continue fighting and devouring each other till they are all entirely destroyed: such myriads of them have been found lying dead, that the air has been infected, and sometimes caused malignant distempers: numbers of them are also destroyed by foxes, weazels, &c. which follow them in their march, so that from what place soever they come, none ever return from their migrations. Contemplate, my dear sir, the singular history of this animal, and then say whether the God of Nature be not wonderful in his works.

THE MOUSE

is an animal which is diffused throughout almost every part of the world: it seems to be a constant attendant on man, and is seldom found but near his dwelling. When viewed without that prejudice which most people entertain against this creature, it is a pretty little animal. In its general formation, as well as its colour, it resembles a rat, but without that aspect of ferocity by which the latter is distinguished. Its skin is sleek and soft, its eyes lively, all its limbs are formed with delicacy, and its motions are quick and active. In this animal, as well as in the rat, the long naked tail has the most disgusting appearance.

The mouse produces young several times in the year, and has generally ten or a dozen at a litter; and in fifteen days the young ones are able to provide for themselves. Aristotle says, that having shut up a mouse big with young in a vessel and provided plen-

ty of grain for their support, he found shortly after an hundred and twenty mice, all produced from this maternal stock. Indeed, as the enemies of this animal are numerous and formidable, nothing but this amazing fecundity can save it from utter destruction.

In contemplating the prolific nature of these diminutive animals, the mouse and the rat, some reflections on the wonderful plan of creative wisdom will readily occur to your mind. These I have already suggested to you in the general view of the animal world, and future observations will often recal them to your consideration. We have already observed that mankind use every art, and contrive every possible method for the extirpation of the rat and mouse; and that not only the cat but every animal of the weazel kind, as well as a multitude of others, are their implacable enemies, persecute them with unceasing hostility, and combine with man for their destruction. Infinite wisdom, however, has, in bestowing on these creatures an extraordinary fecundity, counteracted all the efforts used for their extermination. Their depredations in our houses, our barns, and our granaries, induce us to esteem them noxious and troublesome animals; but are we sure that they answer no beneficial purpose? Are we certain that they do not prevent the propagation of some other creature more noxious than themselves? This, my dear Sir, although yet undiscovered, is not impossible. Our short-sightedness does not permit us to penetrate the all-wise designs of the Creator. On reviewing his work, he "saw that it was good," Gen. chap. i. And as he created every species of animal life for some wise purpose he has with equal wisdom taken measures to prevent their extinction.

There are several varieties of the mouse, which for brevity's sake we shall omit, and proceed to something more interesting. They have all a pretty near resemblance: The principal difference is in the shrew-mouse, which with a body of the same shape and colour, and nearly of the same size as that of the rest of the kind, has the head and nose shaped like

those of the swine, and is in some places called the pig-mouse.

THE MOLE

is an animal which merits in no small degree the attention of the naturalist; for being destined to a subterraneous life, its conformation is admirably adapted to its peculiar mode of providing subsistence. It possesses in an eminent degree, the senses of hearing and smelling; of which the former gives it notice of the approach of danger, and the latter enables it to find its prey in the obscurity of its dwellings under the surface of the ground. It is not destitute of sight as has formerly been supposed: its eyes indeed are extremely small; but it is more than probable that they are so formed as to admit distinct images of the diminutive objects of its pursuit. The wisdom of the Creator is evidently and invariably displayed in the adaptation of each creature to its particular mode of living, of which we have in this curious little quadruped a remarkable instance. While the mole enjoys that perfection of hearing and smelling so necessary to its peculiar mode of living, its optics appear perfectly adapted to its contracted sphere of vision. The piercing eye of the eagle would, to this animal, be not only useless but manifestly inconvenient.

The whole form of its body, but particularly the construction of its fore feet, are admirably adapted to the purpose of making its way in the earth with facility. They are destitute of hair, and have a broad palm, almost resembling a hand; but they are fixed so close to the body that the animal can scarcely be said to have any legs. It remains almost incessantly under ground, and if it happen to be surprised on the surface, it burrows in an instant.

The skin of the mole is remarkable for its beauty, and if converted to a proper use, would probably be not less estimable for its value. We are indeed informed that an ingenious gentleman of Newcastle has discovered a method whereby the exquisitely fine fur of this hitherto despised animal may possibly become of great importance to the public. Being incorporat-





ed with other materials, it forms a stamen of peculiar strength and beauty for the purpose of making hats, superior to any hitherto used in that valuable branch of manufacture. Mr. Bewick adds, that the gentleman has obtained a patent for this useful discovery.

The colour of the mole is generally black, but some have been found with white spots, and others perfectly white. Its fur is very short, close set, softer than the finest velvet, or perhaps than the fur of any other animal; and, although it lives in the earth, it is always exceedingly clean and glossy. It is somewhat singular, that while the ermine and sable are sought in the recesses of their immense solitudes in the rigorous climates and desolate regions of the north, no use has been made of a fur, which in beauty is scarcely inferior to any that Siberia can furnish.

This animal is exceedingly prolific: it breeds under ground, where it forms a commodious nest of moss or fine herbage. It makes its subterraneous tracks in various directions, and throws up here and there large heaps of mould, which are very prejudicial, and consequently render its destruction an object of attention to the farmer.

The desolation which these animals commit in gardens and cultivated grounds, are indeed much greater than the generality of people would suppose possible. M. de Buffon informs us that, in the year 1740, he planted about sixteen acres of land with acorns, of which the quarter part was carried off by the moles; and in many of their subterraneous retreats were found half a bushel, and in some a bushel. After discovering this circumstance, our author caused a number of iron traps to be constructed, by which he caught about thirteen hundred moles in less than three weeks.

Nature, which in every part of the animal creation displays her diversifying energy, has formed several varieties of this animal. One species found in Siberia is of a beautiful green and gold colour, which varies with the light. The yellow mole of North America is larger than that of Europe, and, like the latter,

is covered with a fur exquisitely fine, soft, and glossy; and another kind is found in Virginia, of a black colour, variegated with purple.

THE OPOSSUM

is an animal of which nature has formed several varieties; but all of them distinguished from every other quadruped, except the kangaroo, by having a pouch under the belly, in which the female deposits her young immediately after they are brought forth, and nourishes them until they be able to provide for themselves.

This animal is nearly as large as a cat; but its general figure resembles that of a fox. Its legs are short, and its feet, or rather hands, are not unlike those of a monkey. The construction of legs and hands indicates its incapability of speed; but this disadvantage is counterbalanced by the facility and expedition with which it climbs trees, where it conceals itself in the branches, and surprises the birds that come within its reach.

The opossum is remarkable for possessing the faculty of suspending itself by the tail, and continuing for hours in that situation, from which it darts on its prey with surprising agility and unerring aim. By means of its tail, it can also fling itself from one tree to another. It is easily domesticated, but is not a very agreeable inmate, on account of a rank and disgusting odour that exhales from its skin. Its flesh is eaten by the Indians, and in taste is said to resemble that of a young pig. The Indians also dye its hair, and weave it into garters, and various other articles. This animal was, by M. de Buffon, supposed to belong peculiarly to America; but it is now found to exist in several of the Oriental and South Sea islands.

THE FLYING OPOSSUM

cannot be overlooked among the uncommon varieties of this singular animal. Its ears are large and erect, and it is furnished with a membranous appendage connecting the legs, similar to that of the flying squirrel, and of which it makes use in the same manner to fly from tree to tree. Can we refrain to admire the

power and wisdom of the Creator, which we see so conspicuously displayed in the various forms of animated nature.

This animal is also remarkable for the exquisite fineness of its fur, which is more delicate, and of a finer texture, than that of most other animals. It is of a beautiful dark colour, mixed with grey, and is extremely smooth and glossy: on the throat and belly it is white, and each hip is adorned with a tawney-coloured spot.

It is now, my dear Sir, when we are drawing towards the conclusion of our survey of the first great division of animated nature, that you are to prepare for the contemplation of objects still more curious and striking than those you have yet met with. Leaving you, therefore, a short time in this expectation, I shall for the present conclude with assuring you, that, with every sentiment of sincere affection,

I am, dear Sir,

Your's, &c.

LETTER XXXVIII.

"There roam the ape, the monkey, and baboon,
Fearless and fierce amid their native woods."

DEAR SIR,

I HASTEN to resume our correspondence, in order to gratify the expectation which I am sensible the conclusion of my last letter has raised, by announcing the exhibition of some of the most curious pieces of Nature's workmanship.

The objects of curiosity which I am now going to bring forward to your view, are some of the most remarkable and interesting

ANIMALS OF THE MONKEY KIND.

These are a race which consists of a greater variety of kinds, and makes nearer approaches to the human species, both in form and action than any other class of animal beings.

Monkies of different kinds have been brought into Europe, and exhibited for the amusement of those who delight in contemplating the wonders of the creation; but they are natives only of the warmest parts of the globe, and abound chiefly in the torrid zone, where they entertain with their frolics, and annoy with their mischievous pranks, the inhabitants of the tropical regions.

In those countries, indeed, they are sometimes amusing, but oftener troublesome neighbours, for their restless activity can be equalled only by their mischievous ingenuity.

In the woods of Africa, from Senegal to Ethiopia, on the east, and the Cape of Good Hope on the south, monkies are exceedingly numerous. They also abound in all parts of India, and the Oriental islands, as also in Japan, and the southern provinces of China; and they are likewise found in great numbers in every part of South America, from the isthmus of Darien, to the river La Plata.

The numbers and various species of these animals, have induced naturalists to distinguish them by three grand divisions, viz. *Apes*, or such as have no tails; *Baboons*, which have short tails; and *Monkies*, which have long tails.

In the ape kind, we see the whole external structure impressed with a striking resemblance of the human figure, and endowed with the capability of similar exertions. They walk erect, and the conformation of their hands and feet exactly resembles that of ours. The baboon exhibits a less striking likeness of the human form. He generally walks upon all four, and seldom erect, except through the influence of instruction and constraint. These animals have short tails, long faces, and eyes deeply sunk in their sockets: they are extremely ugly, and their disposition is characterized by the most brutal fierceness. Some baboons are in stature as tall as a man, and far superior in strength.

The monkey kind is much less than the former, and appears still further removed from the human

species. They are an active, lively, and mischievous race of animals, full of grimace and frolicsome gambols, fond of imitating human actions, prying and inquisitive, restless and troublesome, and exceedingly addicted to thieving. They sit upon their posteriors, but never walk erect.

THE OURANG-OUTANG, OR WILD MAN OF THE WOODS, is found in the interior parts of Africa, in Madagascar, and in some parts of the East-Indies; but the isle of Borneo is the place where it chiefly abounds. It avoids mankind, and resides only in the most solitary deserts. As this animal is the largest of all the ape kind, it also bears the nearest resemblance to the human form. Some of this species are said to exceed six feet in height. They are active, strong, and intrepid. They live wholly on fruits, nuts, and other spontaneous productions of the warm countries which they inhabit.

Several of these animals have been brought to Europe; but having been taken very young, it is probable that the coolness of the climate both softens their fierceness, and obstructs their growth, and none have been seen in these parts of the world which exceeded five feet in height. Dr. Tyson, a learned physician and naturalist, gives an accurate description of one of the species which was brought from Angola into this country; and in order to enable you to form an idea of this extraordinary animal, I shall delineate it in the words of that gentleman:

“The body was entirely covered with hair, the colour of which was perfectly black, and the texture of it bore a greater resemblance to the human than to that of the brute: that which grew upon the head and the chin was considerably longer than the rest. The face was like that of a man, the forehead longer, and the head round: the upper and lower jaws were not so prominent as in monkeys but flat like that of the human race: the ears and teeth had, likewise, a greater similitude to the man than the brute: the bending of the arms and legs were the same: and in the whole figure of the animal an affinity might be

traced. The face, hands, and soles of the feet were without hair; and in the palms of the hands it had similar lines to those of the human face. The internal conformation was equally similar, except that it had thirteen instead of twelve ribs. In its passage to England, it had made many friends on board, towards whom it would shew evident marks of tenderness, and used frequently to embrace them with the greatest affection. Monkeys of a lower species it seemed to hold in absolute aversion, and would avoid that part of the vessel where they were confined. As soon as it was accustomed to the use of clothes, it became very fond of them, and would dress itself in part without any assistance, and carry the remaining to some of its friends, and make signs for them to complete the ornament. It would lie in a bed, place its head upon a pillow, and then pull up the bed clothes to its neck, in the same manner as human beings are accustomed to do."

M. de Buffon says, that he saw one of these singular animals sit at table, wipe its mouth with a napkin after drinking; pour the wine into its glass; use a fork and spoon to carry the victuals to its mouth; put sugar into its cup; pour out the tea, and leave it to cool; and, in short, so exactly imitate human actions, that it was astonishing to see how completely instinctive sagacity was in this creature substituted for reason.

From these anecdotes, it appears that the ourang-outang, at least the less and milder kind, may, when taken young, be easily tamed and rendered extremely docile and tractable; but a very indifferent picture is exhibited by travellers, of those which are found in the immense solitudes of Africa, as well as in some parts of the east, and especially in Borneo. They are not only exceedingly swift, but so strong, that one of them could overcome several men. It is therefore impossible to take them alive, especially as they generally go in companies, armed with thick clubs, with which they will not hesitate to attack the strongest and fiercest animals, not excepting even the ele-

phant. And it is worthy of remark, that this is the only animal that makes use of any other weapons than such as are natural. In the island of Borneo, where the ourang-outang chiefly abounds, it is hunted by the inhabitants in the same manner as the lion and the elephant; and even the king and his courtiers follow the chase of this animal with great eagerness; for although its resemblance to the human form might be supposed to procure it pity and protection, we shall scarcely wonder that it should not meet with either, when we consider the fierceness of its disposition, and its formidable hostility to man.

This singular animal has been described by several naturalists and travellers, particularly by Battel Bosman, Schouten, M. La Brosse, M. Grose and Pyrrard. Their descriptions are all interesting, but too long for insertion in this letter, especially as you know, my dear Sir, that my design is rather to give you that general knowledge of nature, which every gentleman ought to possess, than to direct your attention to those minutiae which are more particularly suited to the investigations of such as make these studies their peculiar profession. I shall only observe, that all these accounts of the ourang-outang, although they somewhat differ in certain minute particulars, agree upon the whole, and the differences discoverable in the relation of travellers, are only such as may reasonably be supposed to exist between different individuals of the same species in the endless diversity of nature's ever-varying form.

I have, my dear Sir, been somewhat particular in exhibiting the external structure and characteristic disposition of this extraordinary creature; since it must be considered as one of the wonders of nature, which shews how nearly the animal may approach to the human form, and how much instinct may, in some respects, imitate intellect. In the latter comparison, however, we cannot but perceive an immense disproportion. The ourang-outang soon attains to the perfection of its imitative operations, and arrives at a boundary which it cannot pass. Instinctive sagacity

it appears to possess in an eminent degree, but exhibits no marks of intellectual operation, no traces of reason; between matter and mind there will always be an immense interval. The near approach of this animal to the human form, without possessing any of the faculties of the human mind, will undoubtedly excite our gratitude to the beneficent Creator, for the high prerogatives accorded to us in the inestimable gift of intellect.

THE LONG-ARMED APE,

is the animal which, next to the ourang-outang, bears the nearest resemblance to the human form: it has no tail, and walks erect. Its ordinary stature is from three to four feet: its visage is flat, of a tawny colour, and encircled with grey hair: its eyes are large and sunk; and, on the whole, it has a remarkable singularity of aspect. But the most striking distinction of this animal is, the extraordinary length of its arms, which reach to the ground when it stands in an upright posture. It feeds on the fruits, leaves, and bark of trees; is of a mild and tractable disposition; and, like all the ape and monkey race, is fond of imitation. It is a native of India, and several of the Oriental islands.

THE BABOON

differs from most animals of the ape kind, not only in external formation, but in its disposition, which is fierce and untractable. There are several varieties of this animal, which altogether constitute a fierce and formidable race. The baboon is exceedingly strong; its body and limbs are thick; its tail is about eight inches long; its height, when standing upright, from four to five feet. Its head is large; and its shoulders, which are of an amazing thickness, indicate its prodigious strength: its eyes are small and deeply sunk; its teeth are large and formidable; and in each cheek it has a pouch, into which, when satiated with eating, it puts the remainder of its food. Its body is covered with hair, of a light reddish brown, that on the head is long; the buttocks are generally of a red colour, and naked.





This animal is of so ferocious a disposition, that neither art nor caresses can render it docile or tractable: it is not, however, carnivorous, but feeds entirely on roots, fruits, and other vegetables. It inhabits the hottest parts of Africa; and numerous troops sometimes enter the cultivated parts, and plunder the gardens and fields.

One of these animals seen by Mr. Pennant, at Chester, was of surprising strength, and extremely fierce: it went on all fours, and never stood erect, unless compelled by its keeper, but would frequently sit on its rump in a crouching attitude, with its arms crossed before the belly. It was particularly fond of cheese and wheat; and whenever any ears of the latter were given to it, it dexterously picked out the grains with its teeth, and ate them. Its voice was a kind of roar, somewhat like that of a lion, except that it was low, and rather inward. This species is remarkably fond of eggs; and one of them has been known to put eight into his pouches at once; then taking them out singly, he broke them at the end, and swallowed their contents in the most deliberate manner.

THE DOG BABOON

is distinguished by a longer tail than the rest of this numerous tribe, and seems to form the connecting link between the baboon and the monkey kind. It inhabits the hottest regions of Africa and Asia. It is above five feet high, and exceedingly strong, vicious, and impudent. These animals herd together in troops, and commit great depredations. Such, indeed, are the general propensities of all the ape, baboon, and monkey kinds, which are all of them active, cunning and mischievous creatures, and troublesome neighbours.

From the baboon race, we shall, my dear Sir, proceed to take a slight view of the monkey species, a class of animals weaker and less formidable than the former, but equally dexterous, crafty, and mischievous.

The varieties of the monkey tribe are so numerous,

that it is difficult to describe the different species, or even to enumerate their characteristic distinctions.--- Every country of the torrid zone swarms with these restless, petulant, and troublesome animals; and every forest is enlivened by their restless activity and frolicsome gambols. The inhabitants of the tropical regions regard monkeys as one of their greatest pests, as they often do incredible damage among their fields of Indian corn and rice, and indeed are not less destructive to fruit. Their method of plundering resembles that of the baboons, and is conducted with equal dexterity, sagacity, and caution. They are also very troublesome to travellers, by pelting them with stones, dirt and branches of trees.

Monkeys have an extraordinary attachment to their young. This is, indeed, the most laudable trait in their disposition. Both the male and female alternately fondle the little cub in their arms, and endeavour to instruct it in all their own sagacious arts and frolicsome pranks. If the bantling appear disinclined to profit by their example, or refuse to imitate their actions, the parents overcome its obstinacy by well applied chastisement.

The general food of this tribe of animals is fruit, buds of trees; or succulent roots and plants. Their method of managing an oyster is curious, and very entertaining to those who have an opportunity of witnessing their dexterity. The moment that the monkey sees the shells of the oysters a little open, the crafty little creature slips a stone between them to prevent them from closing again, and then with its hand takes out the fish.

Of monkeys, naturalists have discovered above fifty different species; you will, therefore, my dear Sir, naturally expect that I shall mention only a few of the most remarkable. I shall begin with the

THE NACAQUE, OR HAIR-LIPPED MONKEY.

This animal is a native of Guinea, Congo, and the more southern parts of Africa. In size and strength it nearly resembles the baboon: its nostrils are divided like those of the hare: its visage is naked, ugly,

and wrinkled; and its aspect ferocious and disgusting. This kind is subdivided into several varieties, different both in size and colour. They are all, however, equally destructive in cultivated grounds, for being extremely nice in their choice, they do more damage by pulling up what does not please them, than by the quantity which they devour.

THE PATAS, OR RED MONKEY.

is nearly of the same size with the macaque, and is a native of the same country, but much less frightful in its appearance; its aspect being more agreeable, and its hair of a bright red. These plunder plantations and corn fields, like the former, and use the same precautions of placing centinels, which most of the ape, baboon, and monkey tribes adopt.

THE CATITRIX, OR GREEN MONKEY,

is a beautiful animal. On the back and tail it is of a fine green colour, and the throat and belly are of an elegant silver white. It is common in the Cape de Verd islands, in the north of Africa, and in many parts of the East Indies.

THE MONA, OR VARIED MONKEY,

is a native of Arabia, Persia, and the northern parts of Africa, and is the best known in Europe of all the monkey tribe. Its back and sides are of a deep, brown colour, with black freckles: the legs, feet, and tail, are black: the inside of the thighs of a pale blue; and on each side of the tail there is usually a large white spot: the top of the head is yellow, freckled with black; its nose is short; its face of a dark lead colour, with the beard on each side long, and of a greenish yellow. When tamed, it will feed on all kinds of victuals, but is particularly fond of fruit.

Of all the different species of this kind of animals which either continent produces,

THE MICO, OR FAIR MONKEY,

is the most beautiful: its body is covered with hair of a silver white: its head is small and round: its face and ears of so lively a vermillion, that it might be supposed the effect of art; but Nature, in the variety of her colourings, every where shews that her paint-

ings can receive no addition from the efforts of the pencil. The tail of this animal is long, and of a shining deep chesnut colour, and the whole assemblage of its colours and formation gives it an air of uncommon elegance.

Having now, my dear Sir, laid before you a few of the most remarkable and best known varieties of this numerous, frolicsome, mischievous, and singular race, you will observe, that I have only very slightly touched on this subject of Nature's diversity. Naturalists have enumerated, and travellers have observed an almost endless variety of this little bustling class of animals; and there is scarcely any reason to doubt that the immense woods of the tropical regions contain a number of species which have escaped the eye of every European observer. Although man has so many ages been occupied in examining the operations of Nature in the world of matter and of life, a great part of the immense abyss yet remains unexplored; and perhaps all his genius and industry will never be able to investigate that boundless diversity which the Omnipotent Creator has stamped on his works. If, however, we cannot comprehend the depths of his counsels, nor trace all the varieties of his productions, we can so far penetrate the great designs of his plan, as to perceive that our happiness is its object; and explore the wonders of creation sufficiently to discover that wisdom, power, and goodness, are every where conspicuously displayed.

Dear Sir,

Yours, &c,

LETTER XXXIX.

"Domesticated otters, too,
Employ their skill for man."

DEAR SIR.

THERE now remains only one more ramification of the quadruped race, which I purpose to exhibit to your view. This is essentially distinguished from the rest of that class, by the faculty of living equally in the water and on the land, for which reason animals of this kind are usually denominated amphibious, as being inhabitants of two different elements. In these I flatter myself you will perceive the attributes of the Deity not less conspicuously displayed than in all the other classes of animated nature.

All quadrupeds of this nature have this characteristic distinction, that although they are covered with hair, like the generality of their kind, they are furnished with membranes between their toes, which enable them to swim with facility. Some more nearly resemble the constant inhabitants of the deep, by having their hind feet joined to the body like fins.

THE OTTER

may be said to constitute the first step of this gradation between terrestrial and aquatic animals, the former of which it resembles in exterior appearance and internal conformation, and the latter in its ability to swim, as well as in its habit, and mode of subsistence. The usual length of the otter is about two feet from the tip of the nose to the insertion of the tail, the head and nose is broad and flat, the mouth is formed like that of a fish: the neck is thick and short, the eyes are small, the tail is long, broad near the body, and gradually tapering to the point: the legs are short, but the joints are extremely pliant. The fur of this animal is of a deep brown, with two small spots on each side of the nose and another under the chin.

The otter destroys great quantities of fish, of which it is remarkably fond, and which indeed constitutes its principal food. In pursuing its prey it commonly swims against the current.

Otters are often taken in traps; and the hunting of them is with some a favorite diversion; the old otter will in this case defend itself against the dogs to the last extremity. They bite keenly, and it is not easy to make them quit their hold. An old otter will never leave its hold but with the loss of life, nor ever make any complaint for the severest wounds.

When taken young, these animals may be easily tamed, and many instances of the fact have been witnessed. Being accustomed in youth to obedience and restraint, they become perfectly domesticated, follow their masters, and employ for his service, their talents in fishing.

A person who lived near Inverness procured a young otter, which he brought up tame: it would follow him any where, and when called by its name, was always obedient. When apprehensive of danger from dogs, it always sought his protection, and would fly into his arms for safety. It was frequently employed in fishing, and sometimes caught seven or eight salmon in a day. When tired it always refused to fish any longer, and then was rewarded with as much fish as it could eat. When its hunger was satisfied, it always curled itself up quite round, and fell asleep, in which state it was generally carried home. This animal fished in the sea as well as in a river, and often took great numbers of codlings and other fish. Its food was generally fresh fish, it was also very fond of milk. It is indeed remarkable that notwithstanding the otter's avidity for fish, it will not eat it unless it be quite fresh. When it cannot be had in that state, these animals, if kept tame, must be fed with milk, pudding, &c.

The small otter of Poland, and the north of Europe, is much less than the common kind. Its colour is a dusky brown; its fur, however, is very valuable, being in beauty esteemed next to that of the sable.

Indeed the fur of all this tribe of animals is more or less valuable, so that although nature has assigned their abode in the solitary recesses of deep rivers and extensive morasses, they are still subservient to the use of man. In none of the species, however, is this utility so conspicuous as in that of

THE SEA OTTER.

This is an animal of extraordinary importance in the commercial system of two of the greatest and most powerful empires on the face of the globe; for their skins are sold by the Russians to the Chinese, at the rate of eighty, and even sometimes a hundred rubles a piece. In return for this particular article of export the Russians receive some of the most valuable commodities of China, and thus the skins of these animals, together with a variety of others, which furnish to the fur trade an inexhaustible supply, constitute, as already observed, a lucrative branch of commerce.

The fur of the sea otter is long and thick set, generally of a beautiful glossy black, but in some of a fine shining silver colour. Its legs are thick and short, and the toes joined by a web. Its length from nose to tail is about four feet or something more. The largest of these animals weigh eighty pounds.

The flesh of the young otter is reckoned very delicate, and is scarcely distinguishable from lamb.

Kamtschatka, and the opposite coasts of America, with the numerous islands which lie between the two continents, are the countries where the sea otter principally abounds, and which, with the rest of the furry tribes, render these barren and remote regions in the eastern extremity of Asia, of great importance to the Russian Empire.

THE BEAVER

is an animal in which the power of instinct appears in an eminent degree, and indeed exhibits itself in a form of which few traces can be found in the brute creation. Of all quadrupeds it is the most industrious; and its labours seem to be the result of a social compact formed for mutual preservation, support, and

convenience. If we contemplate this animal in its solitary state, we shall not find it distinguished by any superiority of instinctive sagacity above the rest of the quadruped race. It is by viewing it in his social condition that we shall find its pre-eminence.

In the month of June, or at the latest in July, the beavers begin to assemble, in order to form a society, which continues the greatest part of the year. A company of two or three hundred is immediately collected. These arrive from different parts, and seem to be directed by an irresistible impulse, to one particular place, where they fix their abode. This is always by the side of some river or lake. If it be a running stream, of which the waters are liable to rise and fall their first undertaking is to construct a pier or dam quite across, so as to form a dead water above and below. In some situations the length of this dam is not less than a hundred feet, and frequently ten or twelve feet thick at the base. If we compare the magnitude of the work with the powers of the architect, it will appear enormous, but the solidity with which it is constructed is still more astonishing. That part of the river where the water is the shallowest is commonly chosen, especially if there be a large tree growing on its bank. This tree they immediately set about gnawing down with their teeth, which is performed with astonishing speed and dexterity. Other trees are then cut down in the same manner, higher up the stream, which they float down by water to the dam, where having, with their teeth, cut off the branches, they place them upright against the large tree, which constitutes the foundation of the whole work. While some are thus busied in fixing the stakes, others are employed in collecting twigs, interweaving and twisting them into the jetty work, and a numerous party is occupied in collecting large quantities of earth, stones, clay and other solid materials, which they place on that side of the piles next the stream. By these joint efforts they construct a mound of great strength and capable of supporting the pressure of a considerable weight of water.

When there is a lake conveniently situated for their purpose, this Herculean work of constructing a mound is unnecessary, and they never fail of choosing such a situation if the face of the country afford them an opportunity.

The mole being completed, their next care is the erection of their houses. These are built on piles close to the edge of the water, and are generally of a form either circular or oval. They mostly consist of three stories, of which the first is below the level of the dam, and consequently full of water. The apartments are about four or five feet in diameter, and the walls about two feet thick, neatly plastered on the inside with clay. At the top the building is arched like an oven, and resembles a dome. These edifices are constructed with such solidity as to be impenetrable to the heaviest rains, and to defy the force of the most impetuous winds. Each house has two openings, one for an excursion by land, the other for a ready entrance into the water, in order at once to render convenient the procuring of subsistence and to facilitate the means of escape in case of surprise. The number of houses in one of their settlements, is usually from fifteen to twenty-five. Each family has its own district, its own magazines, and its own habitation; and no strangers are ever suffered to intrude. Each beaver has its own bed of moss, and each family its own hoard of winter provision, which consists principally of the bark and boughs of trees. The latter they pile up with great regularity, and use it as their wants require. In the front of their houses, facing the water, they leave an opening, which serves as a window, and at the same time as a balcony, where they can sit and enjoy the fresh air. They spend a great part of the day in bathing, and almost always retain in the water an upright posture, their head and fore parts not being often immersed.

No predaceous animals dare attack the united republic of beavers in their fortified settlements. Man is the only enemy they have to fear. Among them-

selves a profound peace always subsists, however numerous may be the inhabitants of their colony, which sometimes amount to three or four hundred. A common series of toil strengthens their union: the conveniencies which their joint efforts have procured, and the abundance of provisions which they have amassed, render them easy and happy in their respective families. Having moderate appetites, and entertaining an aversion to blood and carnage, they have neither inducements nor inclination to hostility and rapine; but enjoy a tranquillity which it is a pity that human rapaciousness should ever disturb. This, however, is frequently done for the sake of their skins, and the drug called castorum, which is produced from this animal, and is found in a liquid state, in bags of skin about the size of an egg. This matter, when dried, is capable of pulverization. It is of an oily nature, of a pungent bitter taste, and of a disagreeable smell, but of considerable use and efficacy in medicine.

The skins of these animals vary in colour: in general they are of a chesnut brown, more or less dark, but the most valuable are black. These furs constitute a valuable article of commerce. Many thousands are annually imported into Europe from America. In 1763, the Hudson-bay Company sold 54, 670 beaver skins at one sale.

The Indian hunters, lured by European commodities, explore the inmost recesses of the American continent in order to discover the retreats of these inoffensive animals, and procure as great a number of skins as possible, which they barter chiefly for the noxious articles of spirituous liquors and tobacco.

Commerce, my dear Sir, like every thing else in this world, is productive of a mixture of good and evil. This is the case with all things here below. The ways of Divine Providence are inscrutable; but, in all probability, this mysterious dispensation is designed to teach us that our present life is no more than a state of probation, and to prevent our too ardent attachment to its temporary comforts and pleasures.

The wonderful animal of which I have just been displaying the disposition and habits, is remarkable for the size and strength of its cutting teeth, which enable it to gnaw down trees of great magnitude, with incredible facility and dispatch. It does not bear in its aspect any striking impression of superior sagacity; its ears are short and its nose blunt; its fore feet are small, but its hind feet large and strong, with membranes connecting the toes. Its length from nose to tail is generally about three feet: the tail is about eleven inches long and three broad, being nearly of an oval form, flat, and covered with scales. This tail, so different from that of other quadrupeds, serves not only as a rudder to direct its motions in the water, but as a most useful instrument for laying on the clay in constructing and plastering its habitations. The senses of the beaver are extremely acute, its smelling in particular is so delicate that it will not suffer any filth, or any thing of a disagreeable scent, to remain in or near its apartments.

There are at present in the Menagerie at Exeter 'Change, two male beavers, which are very tame, and will even suffer strangers to handle them. They frequently sit upright, to eat or look about them, and often play with each other in a gay and frolicsome manner. If any thing moveable be put into their small apartment, they appear highly pleased, and drag it about, but have never been known to carry any thing about on their tails. They subsist principally on the bark of trees and bread; but such is their propensity to gnaw timber, that they would soon eat their way out, if allowed the full range of a room.

I have, my dear Sir, been somewhat particular in giving you a description of this extraordinary animal and its astonishing works, stupendous fabrics indeed they may be called when we reflect on the simplicity of the means employed, and consider that their teeth, their feet, and their tails, are all the instruments which they use for the accomplishment of such great undertakings. The beaver, indeed, is a subject on which all

zoologists have expatiated, and which exhibits a remarkable display of instinctive sagacity, worthy the attention of every mind that delights in contemplating the wonders of creation; especially when we consider the regularity with which their works are carried on, and the order and discipline which pervade their societies.

An overseer is always chosen among them, whose orders are punctually obeyed; and a smart stroke with his tail upon the water is his word of command, whenever the united force of numbers is necessary to be applied. The same signal is also used on the approach of an enemy, to warn the society of its danger. On such occasions each beaver, as he thinks it expedient, either conceals himself in his habitation, or plunges into the water, and immediately disappears.

You will be ready to ask, by what secret counsels are these animals moved to unanimity of design, by what power impelled to uniformity of action? They are guided, my dear Sir, by that Being who has regulated the propensities, the instincts, and operations of all animal existence; the God of nature is their unerring director.

THE WALRUS OR SEA-HORSE

is an animal perfectly amphibious, and far more attached to the watery element than the beaver. In its habits, indeed, it seems to approach nearer to the nature of fishes than to that of quadrupeds, although naturalists have generally included it in the latter denomination.

The sea-horse grows to a large size, and has sometimes been found eighteen feet in length, and twelve in circumference at the thickest part. Its upper jaw is armed with two large tusks, sometimes above two feet in length, and weighing from twelve to twenty pounds. These teeth together with its fat, are what stamps a value on this animal, as they are equal to those of the elephant in beauty and durability, and the fat of a well grown sea horse is said to yield half a ton of oil, equal in goodness to that of the whale.





The skin of this animal is thick, and wrinkled, with a covering of short brownish hair. Its legs are short, and its toes, which are five on each foot, are connected by membranous webs, the hind feet are very broad; it throws up water with its nostrils like a whale.

The sea-horse is chiefly found in the northern seas.

Great herds of them are sometimes seen basking on the shore, or sleeping on a field of ice. When alarmed they throw themselves into the water with extreme precipitation. If wounded, they become bold and furious, and unite for their own defence. On these occasions they will attack a boat and attempt to sink it, by striking their teeth into its sides, bellowing at the same time in a most hideous manner.

The following anecdote related in "Hearne's Journey to the Northern Ocean," may perhaps be deemed worthy your attention.----- "In the year 1766, some of the crew of a sloop sailing to trade with the Esquimaux, were attacked in their boat by a great number of walrusses; and notwithstanding every attempt to keep them off, a small one got in over the stern, and after looking at the men some time, again plunged into the water. Another of an enormous size then attempted to get in over the bow; and every other means proving ineffectual to prevent such an intrusion, the bowman put the muzzle of a loaded gun into the animal's mouth, and shot him dead. He immediately sunk, and the people reached their vessel just before his enraged companions were ready to make a fresh attack.

This animal feeds on sea-weeds, and small fish. In climbing upon the rocks, and pieces of ice, it makes use of its teeth as hooks to secure its hold, and then draws up its unwieldy body.

The white bear is an implacable enemy to the sea-horse; and dreadful conflicts are said to happen sometimes between them, in which the formidable tusks of the latter generally render it victorious.

THE SEAL

is another amphibious animal, which seems to constitute one of the last steps of gradation between the race of quadrupeds and fishes, and which, although generally classed by naturalists among the former, appears to partake in a greater degree of the nature and habits of the latter. It is found, with some variation of species, in almost every quarter of the globe; but chiefly abounds in the northern seas of Europe, Asia, and America, and in the unfrequented regions towards the south pole.

The usual length of this animal is five or six feet. It is covered with short hair of various colours, smooth, shining. It has five toes on each foot, which are armed with strong sharp claws, whereby it is enabled to climb the rocks on which it delights to bask in the sun. On the unpeopled shores, of the icy seas under the arctic and antarctic circles, and still nearer to the poles, these animals may be seen by thousands on the rocks, or on the sandy beach. The female sits on her hind legs while she suckles her young. The growth of seals is amazingly rapid, and the dam, after bringing them forth on the land, soon carries them with her into the sea, and learns them to swim; when they are weary she places them on her back. The old ones are very attentive to their young, which in their turn are docile and obedient.

The flesh of the seal was formerly esteemed a delicacy, although now but seldom eaten. That it was once admitted to the tables of the great is evident, from its constituting an article in the bill of fare of that sumptuous entertainment given by Archbishop Neville, in the reign of Edward IV. though perhaps scarcely a peasant in the kingdom would, at this day, be willing to make it a part of his dinner. Such is the change of manners, such the influence of custom.

If the flesh of this animal be fallen into disrepute, the oil produced by its fat is perhaps held in higher estimation, and sought with greater avidity than at the period alluded to, or in any of the preceding ages: a young seal yields above eight gallons of this oil.





Their skins are also very valuable, and are made into a beautiful sort of leather used for shoes, and various other purposes, so that if the seal be no longer considered as a delicacy of the table, it forms an important article of trade.

When taken young these animals are capable of being tamed, and will even answer to a name, and follow their masters like a dog.---A seal was exhibited in London, in the year 1750, which would answer to its keeper's call, take food from his hand, stretch out its neck as if to salute him, and crawl in and out of the water at command. Another animal of the same species was so far domesticated, that though taken out to sea every day, and thrown in from a boat, it invariably swam after its master, and allowed itself to be retaken without any attempt to escape. When at home it was generally kept in a vessel of salt water, but sometimes crawled about the house, and even approached the fire.

There are, as already observed, several varieties of this animal, of which the most remarkable are the Leonine and Ursine Seal; but these I shall, for brevity sake, omit, especially as their general characteristics and commercial importance are nearly the same. I shall therefore pass forward to the last tribe of quadrupeds, which I wish to recommend to your notice. Leaving you therefore to reflect on the effects of human ingenuity and industry in deriving so great advantages from the inferior creatures, and especially on the beneficence of the Creator, in rendering the animal race so eminently subservient to the benefit of man, I shall conclude, by assuring you that I am, with sincere affection,

Dear Sir,

Your's, &c.

LETTER XL.

"Now all is hush'd, save where the weak-eyed bat,
With short shrill shrieks, flits by on leathern wing"

COLLINS.

DEAR SIR,

AS the last described class of animals seems to connect the animal inhabitants of the earth with those of the seas, the tribe which I am now going to present to your view appears to join, in a similar manner, the former with the people of the air, so that between quadrupeds, fishes, and volatiles, there is no distinct interval, no chasm in the long gradation of animal life.

THE BAT

is distinguished from every other quadruped by being furnished with wings; for which reason it is, by the peasants, generally ranked among volatiles, and some naturalists seem doubtful in what class of animal existence its station ought to be assigned. However, as it has all the characteristics of quadrupeds, Linneus refers it to that class, to which indeed it is allied by its external and internal structure, while its resemblance to the volatile race consists solely in the faculty of flying.

THE COMMON BAT

is well known, and frequently seen in this country, as well as in almost every part of Europe. It is somewhat less than a mouse, and the extent of the wings is seven or eight inches. These are only membranous webs, resembling thin leather, and extending from the fore feet to the tail: the hind feet have each five toes armed with claws; the body is covered with a very short and soft fur; the eyes are very small, and the ears like those of a mouse, to which animal it bears no small resemblance in its general aspect, but is somewhat darker in colour: it has four cutting teeth in the upper and six in the under jaw.

About the end of summer this creature retires to

caves, old buildings, and hollow trees, where it remains during winter in a state of torpidity. Some of them cover themselves close with their wings, and suspend themselves by their hind feet, and others stick fast to old walls.

All the bats known in Europe are perfectly inoffensive; but in the tropical climates, they not only grow to a large size, but are of a more formidable nature. I shall give you a concise description of two of the most remarkable species.

THE GREAT BAT OF TERNA TE AND MADAGASCAR is about a foot long, and four feet in breadth, when its wings are expanded. It has large canine teeth, and the tongue pointed: its nose is sharp, and its ears large and naked. It has five toes on the hind feet armed with strong hooked claws: it has no tail, and its general colour is a dusky brown.

These formidable creatures are extremely voracious, and sometimes assemble in such prodigious flocks as to darken the air; devouring indiscriminately every kind both of vegetable and animal food that lies in their way. Buffon imagines that the ancients borrowed from these creatures, their ideas of the harpies, and it must be acknowledged that they correspond almost exactly with the description given by the poets of those fabulous monsters; but that the ancients were acquainted with these animals or with the countries where they are found, is extremely problematical. Like the fabulous harpies, their figure is uncouth, and their disposition fierce and voracious. A hundred or two of them may sometimes be seen hanging on a tree, with their heads downward and their wings folded, in which manner they repose during the day; but in the night they make a horrible noise in the forests. When young they are eaten by the inhabitants of the countries where they are found, and are esteemed excellent food.

THE VAMPIRE, OR SPECTRE BAT OF S. AMERICA is a most formidable and dangerous creature, and, although not remarkable either for size or strength, is the common pest of men and animals in those parts

where it abounds; for it destroys every thing that has life which it finds asleep and exposed to its attack. It sleeps in the day, and, according to Ulloa, comes abroad in the evening, when such multitudes make their appearance as to cover the towns and villages with a widely extended canopy.

The vampyre is the most terrible and dexterous phlebotomist in nature. Its nose is long, and has at the end a membrane of a conical form, somewhat resembling a horn, but flexible, which not only gives it a hideous disgusting aspect, but also furnishes it with a formidable and dangerous weapon, which it insinuates with inconceivable dexterity into the veins of any creature it finds asleep, without giving it sufficient pain to awake it. It is therefore extremely dangerous to sleep abroad in the countries where the vampyre is common, as it sucks the blood with such avidity that persons attacked by it frequently pass from a sound sleep to an eternal repose.

Captain Stedman, during his stay in Surinam, was attacked in his sleep by a vampyre bat, as appears in the following extract from his narrative.---“I cannot forbear” says the captain, “relating a singular circumstance respecting myself, viz. that on waking about four o’clock one morning in my hammock, I was extremely alarmed at finding myself weltering in congealed blood, without feeling any pain whatever. Having started up, I rang for the surgeon. The mystery, however, was that I had been bitten by the vampyre, or spectre of Guiana. Having applied tobacco ashes as the best remedy, and washed the gore from myself and my hammock, I observed several small heaps of congealed blood all round the place where I had lain, upon the ground; on examining which the surgeon judged that I had lost twelve or fourteen ounces during the night.”

The vampyre is equally destructive to animals as to the human race; for according to M. de Condamine, it has in many parts of South America, destroyed all the cattle introduced into the country by the settlers from Europe.

I have now, my dear Sir, exhibited to your view the most remarkable varieties of this curious species, which seem to link the quadruped with the volatile part of the creation. It would be useless, perhaps even impossible, to display all the distinguishing characteristics of the various tribes, which exist in every country, and are all discriminated from one another by some peculiarity of form or disposition. We have already seen that of several kinds of animals, especially those that are widely diffused, the varieties produced by difference of soil and climate, in conjunction with other circumstances, are innumerable, and baffle every effort of research. By this time, however, I am fully persuaded you have learned to observe that amidst the infinitely diversified productions of creative power, various degrees of utility are not less conspicuous than variety of form and difference of faculties: composing one general and uniform plan, in every part of which wisdom, order, and fitness are eminently displayed.

With every wish for your health, prosperity and intellectual improvement,

I am, dear Sir,

Your's, &c.

LETTER XLI.

“ ————— Ye birds,
That singing up to heaven-gates ascend,
Bear on your wings, and in your notes His praise ”

MILTON.

DEAR SIR,

HAVING led you through the interesting range of the first grand division of animated nature, the second now presents itself to your view, and claims in an eminent degree your attention.

The volatile race constitutes this division, as that of quadrupeds composes the first; and the power, the wisdom, and the goodness of the Creator, are display-

ed equally in both. We have observed the different kinds of quadrupeds, distinguished by the various characteristics of beauty, strength, and utility, and shall now contemplate in the feathered tribes, the same creative energy of nature, or to speak with greater precision, of the God of nature, whose plastic hand has embellished them with so great a variety of colours, given them such a diversity of instincts, suitable to their modes of life; and furnished them in so admirable a manner, with a conformation of body perfectly corresponding with their habits and dispositions.

Quadrupeds, living on the earth like man, and, in a great measure on the same kinds of food, bear a considerable resemblance to him in their general conformation; but the structure of birds is totally different from both. Instead of those characteristics of strength, observable in the formation of the generality of quadrupeds, the volatile tribes seem peculiarly calculated for escape, and every part of their organization, anatomically considered, proves the completeness of their mechanism. Their whole frame is wisely calculated to facilitate their motion through the yielding air. Every part is formed for lightness and buoyancy. The position of their feathers all lying one way, and generally pointing backwards, and folding over one another in exact and regular order, not only causes them to glide easily through the air, but, together with the soft down next their bodies, protects them from the piercing cold of the atmosphere, to which they would, without this fence, be more than any other creatures exposed.

Their wings are constructed in the most wonderful manner, and, although made of the lightest materials, are furnished with such a degree of power as to impel their bodies forward with astonishing rapidity. In some birds the strength of wing is almost inconceivable, and, were it not verified by observation and experiment, would appear incredible. The swan, with a flap of his wing, is able to break a man's leg, and it is said that a similar stroke from an eagle has been

known to kill a man instantaneously. The method which nature has provided for the preservation of this curious texture of feathers with which the volatile part of the creation is clothed, will merit our attention.

Lest they should be damaged by their violent attrition against the air, or by imbibing the moisture of the atmosphere, birds are furnished with a gland, situated on the rump, containing an oil, which they can press out with the bill, and with which they anoint their feathers. In water-fowls this oil is so plentiful that by it their plumage is rendered completely water-proof.

In all birds the eye is peculiarly calculated for distant vision, and the ear for accurate and quick perception; and their sense of smelling is exceedingly acute. Their legs and feet are admirably adapted to the different purposes for which they are designed, being light, compact, and bony. In water-fowl the toes are joined by a ligament of tough skin, to facilitate their swimming, and render them fit for the element in which nature has destined them chiefly to live, while in others they are constructed for their security in perching upon trees.

Carnivorous birds, like carnivorous beasts, have but one stomach, and their intestines are much shorter than those of such as are granivorous. The latter have, in addition to the crop, or stomach, where their food is moistened, a second stomach, called the gizzard, in which the digestion is completed. This is composed of two hard and strong muscular substances, and its extraordinary powers in comminuting the food, would exceed the bounds of credibility, were they not attested by incontrovertible facts, the result of experiments made by Spalanzani, who proved that the stomachs of turkeys and common poultry, had the power of breaking to pieces and digesting glass, tin, and iron. Some of the experiments of this naturalist, however, seem to be of too cruel a nature to be proposed for imitation; and it does not appear consistent with the will of the Great Author of Nature,

that we should indulge our curiosity, or acquire, at the best, an useless knowledge, by tortures inflicted on any of his creatures; especially as without such means, the multifarious variety displayed both in the physical and moral world, is sufficient to exercise the greatest genius, and the most indefatigable research.

It is remarkable, that birds of the granivorous kind frequently swallow a number of small stones, which are often found in their stomachs, and which assist digestion, by grinding down the grain, and separating its parts.

Between carnivorous birds and carnivorous quadrupeds, there seems to be a visible analogy both in their structure and disposition. Both are provided with weapons of rapine and destruction: their manners are fierce and unsocial, and they seldom herd together like those of the granivorous class. Rapacious birds retire to the tops of sequestered rocks, or the depths of extensive deserts, where, like the predaceous quadrupeds, they conceal themselves in gloomy solitude. The granivorous tribes, on the contrary, like those quadrupeds which feed on herbage, are gentle, inoffensive, and social; and may, for the most part, be easily domesticated. Man has in consequence availed himself of this tractable disposition, and judiciously selected from the numbers which on every side surround him, such as were likely to be the most useful; among which the hen, the goose, the turkey, the duck, and the pigeon, are the principal, and furnish us with a store of nutritious and palatable food.

To enter into a minute history of the feathered part of the creation, is, my dear Sir, incompatible with our present purpose: one particular circumstance, however, has been so long the subject of remark and investigation, that it cannot be suffered to pass unnoticed.

The annual migrations of those, which from that circumstance are denominated birds of passage, have exercised the speculation of all ornithologists, and given rise to a variety of conjectures among writers on that subject. Most birds are, in some measure,

birds of passage; for although they do not migrate to distant regions, the greatest part of them make frequent removals from one neighbouring district to another, or from the interior of the country to the sea-coast. The causes of these migrations, although enveloped in obscurity, appear, according to the most probable conjectures, to arise from the failure of their accustomed food, or the change of the seasons.

The manner of performing the long flights, which many of those birds take across immense tracts of water before they arrive at any place of rest, throws formidable difficulties in the way of investigation; but we ought, my dear Sir, to consider, that being accustomed to measure distance, with relation to time, by the speed of those animals, with which we are well acquainted, we are apt to overlook the superior velocity of birds, and the ease with which they continue their exertions.

Our swiftest horses are supposed to go at the rate of half a mile in somewhat less than one minute; but such a degree of exertion soon produces debility, and cannot be long continued. With birds, the case is very different; their motions are not impeded by similar causes. They glide through the air with a velocity superior to that of the fleetest quadruped, and can for a great length of time continue their motion. If we suppose a bird to proceed at the rate of no more than a mile in two minutes for the space of twenty-four hours, it will, in that time, have passed over an extent of more than seven hundred miles; and, if aided by a favourable current of air, there is reason to suppose that the same may be performed in a much shorter space of time.

If it be asked how they know the time when to commence their migrations, and in what manner to direct their course, it may with great propriety be answered, that the same All-ruling Power which bestowed reason on us has given instinct to them: the changes in the atmosphere may indicate the proper time of removal; and it is also to be observed, that their course is determined rather by the weather.

than the situation of countries; and that they remove from a colder to a warmer climate, or the reverse, as the state of the air and their own feelings give the impulse and direction.

The migrations of the swallow and the cuckoo, have been particularly noticed by every writer on ornithology, and various opinions have been formed respecting their disappearance, and the state in which they subsist during that interval.

However, after all the enquiries of naturalists into this mysterious branch of animal œconomy, the subject remains involved in no small degree of obscurity; and, after all our researches, we are not yet certain into what regions of the globe these birds emigrate. You will not, therefore, be displeased, if I close the subject with these beautiful lines of the poet:

“ Amusive birds say where your hid retreat,
When the frost rages and the tempests beat;
Whence your return by such nice instinct led,
When spring, sweet season! lifts her bloomy head?
Such baffled searches mock man’s prying pride;
The God of Nature is your secret guide.”

Leaving you for a while in expectation of the entertainment you will find in contemplating so beautiful and so curious a branch of animated nature as the feathered part of the creation, I shall for the present conclude, with assuring you, that with every sentiment of affectionate respect,

I am, dear Sir,

Your’s, &c.

LETTER XLII.

"Gavest thou the goodly wings with the peacock,
Or wings and feathers with the *estrich*?"

BOOK OF JOB.

DEAR SIR,

IN fulfilling my promise of giving you a sketch of some of the most remarkable of the winged inhabitants of the air, which, by the vivacity of their motions, the beauty of their plumage, or the melody of their notes, enliven the general picture of nature; I shall, for the sake of methodical arrangement, endeavour to follow the divisions which most naturalists have adopted, and class them under the following heads, viz. the rapacious kind, the poultry kind, the pie kind, the sparrow kind, the crane kind, and the aquatic kind; but not, perhaps, without indulging in some partial deviations.

I shall, in the first place, my dear Sir, make another division, which some ornithologists have adopted, and others neglected, and consider in a distinct view a few of the feathered tribes which do not seem properly to come under any of the above-mentioned denominations.

Among volatiles, each genus is not only distinguished by its appropriate characteristics of size, colour, and conformation, but also by the difference of their notes, and the various modes of flight, which, to the practical ornithologist, afford, at a distance, the surest means of discrimination. From the bold and lofty soaring of the eagle, to the short and sudden flittings of the wren, there is an ample field for the curious investigator of nature, in which the mind may expatiate with delight, in contemplating the various movements of the winged nations, soaring or fluttering around on every side. A certain class, however, does not possess the faculty of flying; and as we have already observed, in speaking of the bat, these seem

to form one of the connecting links in the great chain of animal life.

As the bat seems to be the last in the class of quadrupeds, and to make the nearest approach to that of volatiles, so the ostrich, the emu, the cassowary, and the dodo, appear the least removed from the former, and may be considered as constituting the first gradation of the latter class.

THE OSTRICH

has been noticed from the remotest antiquity, for we find it included by Moses among the birds which were accounted unclean: that it was well known to the Israelites and Egyptians at so early a period is not indeed surprising, as it inhabits scarcely any other countries than the sandy deserts bordering on Egypt and Palestine. It appears, indeed, perfectly adapted to those arid regions, where eternal sterility reigns. It delights to range in those immense solitudes, where, if nature, parched with almost perpetual drought, produce but few vegetables, and still less water, its appetite requires but little selection to gratify it; and its powers of digestion are inconceivable. Its voracity is such, that it feeds not only on every thing that is edible, but voraciously devours leather, glass, iron, and stones. When an ostrich is killed, its stomach is found crammed with such an assemblage of incongruous substances, as appears astonishing; and were not the fact well known, would be absolutely incredible. It is asserted that this bird never drinks; and the aridity of the deserts which it inhabits, gives a sanction to this opinion.

The ostrich, in its general figure, resembles the camel, and might at a distance be mistaken for that animal. It is undoubtedly the largest of all birds, being nearly as high as a man on horseback. It measures seven feet from the top of the head to the feet, but from the back only four; its neck is consequently three feet long. When the neck is stretched out, it measures six feet from the head to the rump. Each wing with the feathers is about three feet in length, and about half as long without them.





The plumage is that which causes the ostrich to be the most highly esteemed. It is almost every where considered as an elegant article of personal decoration. In most of the species its colour is a mixture of black and white, but in some it is said to be grey. The feathers of the tail and wings are held in such high estimation, as to constitute, in some countries, no inconsiderable article of commerce; and the bird is hunted merely for their sake. All the other parts of its body and thighs are bare, the latter are extremely large and fleshy: the legs are covered with large scales: the end of the foot is cloven, and has two very large toes, one near seven, and the other about four inches long.

This bird has been erroneously represented as devoid of natural affection; but far from leaving its eggs to be hatched by the sun, as it has often been asserted, it never remains long absent from them; and in a country where the heat is so intense, constant incubation is unnecessary. The young ones for some days after they are hatched, can neither walk nor stand, and during that period of helplessness, the old ones attend them with the most anxious solicitude. The eggs of this bird generally weigh from twelve to fifteen pounds.

The Arabs train up their fleetest horses for the purpose of hunting the ostrich, which, although a very laborious, is esteemed a very entertaining amusement. Of all creatures, the ostrich is certainly that which runs with the greatest speed, its wings, as well as its legs, keeping in motion, serve as oars to waft it along; and did it press forward in a direct line, instead of a circular course, it would undoubtedly bid defiance to every mode of pursuit. In order to take them with less trouble, another method has sometimes been used, which is both singular and curious. A person having clothed himself with the skin of an ostrich, and putting one of his arms through the neck, has imitated all the motions of that bird, so as to approach a flock of these creatures, and catch some of them without difficulty.

Although the ostrich inhabits the most solitary deserts, it does not seem an unsocial creature. In those horrid regions, large flocks of them are seen together, which, at a distance, appear like a regiment of cavalry; and being mistaken for a troop of plundering Arabs, have, on some occasions, given the alarm to a whole caravan that was crossing the deserts.

I have, my dear Sir, expatiated somewhat largely on the ostrich, as it has been noticed from time immemorial, and is often mentioned by authors both sacred and profane. In regard to the other birds of the struthious order, I shall endeavour to describe them in a manner more concise.

THE CASSOWARY

is a bird not far inferior in size to the ostrich, being about five feet and a half in height; and although its neck be shorter, its body is as bulky as that of the former; its neck and legs also, being thicker and stronger in proportion, this conformation gives it an air of strength and compactness, while the fierceness and singularity of its aspect conspire to give it a formidable appearance.

The head of the cassowary, although small, like that of the ostrich, seems calculated to inspire some degree of terror, being destitute of feathers, and almost wholly covered with a helmet of a horny substance. To the peculiar singularity of this natural armour, may be added the colour of the eye of this bird, which is of a bright fiery yellow, and the globe being above an inch and a half in diameter, gives it an air equally fierce and extraordinary. The skin which covers the breast is callous, and without feathers; the thighs and legs are feathered, and exceedingly strong and thick.

This bird has been said to have the head of a warrior, the eye of a lion, the armour of a porcupine, and the fleetness of a horse. It seems, indeed, so perfectly formed for a life of hostility, both offensive and defensive, for terrifying others, and protecting itself, that the cassowary might, from its external appearance, be thought one of the fiercest and most terrible

beings of the creation: but although nature has given it so terrific an aspect, and such formidable weapons, Its disposition is timid to excess. It never attacks, and when assaulted, depends on its fleetness more than its strength; and it runs with such amazing velocity, that the swiftest race-horse would soon be left far behind.

The same voraciousness which distinguishes the ostrich prevail equally in the cassowary. The eggs also of the latter, although not so large as those of the former, are of a prodigious size, measuring fifteen inches round the longest, and twelve the shortest way: they are of an ash-colour, inclining to green. The Molucca islands, with those of Java, Sumatra, and Banda, and the opposite parts of the continent, are the native country of the cassowary; nor has it ever yet been found in any other part of the globe.

THE DODO

is a native of the isle of France. Unwieldy in form, and deficient in strength, its body is massive, and almost round; its legs resemble two thick clumsy pillars. I shall not trouble you with a further description of its conformation or habits; than merely observing, that it seems to be among birds what the sloth is among quadrupeds. We are too little acquainted with it to know its instincts, its sensations, or its utility in the general system. Of this only we are certain, that the Omnipotent and All-wise Creator has made nothing but for some beneficial purpose, and that every thing has its place assigned, and its use determined in the universal plan. Leaving you with this important truth impressed on your mind,

I am, dear Sir,

Your's, &c.

LETTER XLIII.

" High from the summit of a craggy cliff,
 Hung o'er the deep,—such as amazing frowns
 On utmost Kilda's shore, whose lonely race
 Resign the setting sun to Indian worlds,—
 The royal eagle draws his vigorous young,
 Strong-pounc'd, and ardent with paternal fire;
 Now, fit to raise a kingdom of their own,
 He drives them from his fort, the towering seat,
 For ages, of his empire."

THOMSON.

DEAR SIR,

I SHALL now proceed to give you a view of the rapacious tribe of birds which reign masters of the airy regions, in the same manner as the beasts of prey among quadrupeds domineer over the other animals that inhabit the forest, and no doubt but you will be well pleased to contemplate the powers and faculties of the eagle, which, under the denomination of the bird of Jove, has so frequently been introduced by poets for the illustration or embellishment of their subjects.

THE GOLDEN EAGLE

is the largest and noblest of all the feathered tyrants of this race; and has obtained among birds the same pre-eminence which the lion is allowed to possess among the quadruped tribes. From the point of the bill to the extremity of the tail, it measures more than three feet, and about eight feet in breadth, when its wings are extended. The weight of the female is from sixteen to eighteen pounds; but the male is smaller, and does not commonly exceed twelve pounds. The eagle possesses in an eminent degree the faculty of vision: its eye is remarkably keen and penetrating, although deep sunk and covered by a projecting brow; and the iris, being of a fine bright yellow, shines with extraordinary lustre. Its general colour is a deep brown, mixed with tawny on the head and neck. The tail is black, and spot-

ted with ash colour: the legs are yellow, and feathered down to the toes; and the claws are remarkably large, the middle one being two inches in length.

Eagles are seldom found but in mountainous and thinly peopled countries, where they breed among the loftiest cliffs, and in the places which are most remote from man.

Of all the feathered race, the eagle soars to the greatest height, and for this reason has obtained among the ancients the appellation of the bird of Jupiter. As he has not much suppleness in the joints of his legs, he rises slowly from the ground; but his strength of wing is so great, that he is able to carry off geese, hares, lambs, kids, and even infants themselves have fallen victims to his rapacity; a circumstance which might possibly give rise to the fable of Ganymede. An instance is recorded of two children in Scotland having been carried off by two eagles, which being discovered and pursued, had only just time to lodge them in their nest before they were overtaken, and by that means the two little innocents were restored to their terrified parents without having received any harm.

Smith, in his history of the County of Kerry, relates, that during a summer when the scarcity of provisions amounted almost to a famine, a poor man got a comfortable subsistence for his family out of an eagle's nest, by regularly robbing the young eagles of part of the food provided for them by the old ones; having luckily hit on the expedient of protracting their assiduity beyond the usual time, by clipping the wings, and thus retarding the flight of the young, and having perhaps still more luckily escaped being surprised by the old ones in committing those depredations on their premises. How fatal the consequences of such a surprise might have been, may be easily conjectured, from a circumstance which happened some years ago in the same county. A peasant resolved to rob the nest of an eagle that had built in a small island in the beautiful lake of Killarney. He therefore stripped and swam to the island

while the old ones were absent. Having robbed the nest of its young, he was preparing to swim back with the eaglets tied in a string, but when he was up to his chin in the water, the old eagles returned, fell upon the plunderer, and in spite of his resistance, never desisted till they dispatched him with their beaks and their claws.

The eagle is certainly at all times a formidable neighbour, but particularly when bringing up its young. It is then that both the male and the female exert all their force and industry for the supply of their offspring. Their nest is commonly built in the most inaccessible cliff of the rock, and often shielded from the weather by some projecting crag which overhangs it.

This noble bird is found in various parts of Europe; but it abounds chiefly in the warmer regions. It commonly breeds in the mountainous parts of Ireland. It lays three, and sometimes four eggs, of which it seldom happens that more than two are prolific. Mr. Pennant says, that there are instances, though rare, of their having bred in Snowden hills, in Wales. Mr. Wallis, in his *Natural History of Northumberland*, says, "It formerly had its aerie in the highest and steepest parts of Cheviot." In the month of January, 1735, a very large eagle was shot near Warkworth, which measured from point to point of its wings eleven feet and a quarter.

This formidable tribe of birds admits of many varieties. In the rear of that which is here described, follow the ring-tailed eagle, the common eagle, the bald eagle, the white eagle, the rough-footed eagle, the black eagle, the osprey, the sea eagle, and the crowned eagle. These, and divers others, form different shades in this ferocious family; but a particular description of them is unnecessary, as they have all the same general form, the same rapacity, and the same habits, and are all remarked for their longevity. The eagle has often been known to live a hundred years; it is said that it does not even then die of old age or debility, but from the beak's turning inward on the

under mandible, which prevents it from taking any food. Its longevity is not, however, more remarkable than its power of supporting long abstinence. An eagle, in the possession of Mr. O. Holland, remained, through the carelessness of servants, the space of twenty-one days without any kind of sustenance. But even this is less extraordinary than an instance related by M. Buffon, who was assured, by a person of veracity, that one of these birds being caught in a fox trap, lived five weeks without any kind of aliment. It shewed no symptoms of languor till the last eight days; and it was at last killed in order to terminate its sufferings. When circumstances of this kind happen accidentally, they are worthy of remark; but to ascertain by experiment how much any animal is able to suffer, would be shocking to humanity.

I have been a little particular in describing the habits and propensities of this chief of the feathered nations; but that I may not encroach too much on your time, I shall endeavour to compensate my prolixity on this interesting subject, by consulting brevity in some of less importance. However, I was sure that you would be pleased to see a just delineation of a bird which has furnished poets and moralists with so many and so beautiful allusions, and which so strikingly shews what powers the Great Creator can bestow on different orders of animal existence.

THE CONDOR OF AMERICA

is universally allowed to be the largest of all the birds that are endowed with the power of flight; and it also possesses in the highest degree all the qualities that can render it formidable. The wings, when extended, reach eighteen feet from one extremity to the other. Its beak is so strong as to pierce the hide of any horned cattle; and it is said that two of these birds is able to devour an ox. When stimulated by hunger, the condor does not hesitate to attack mankind; but fortunately there are not many of the species; if they were numerous their depredations would be dreadful. The Indians assert, that this rapacious

bird will carry off a deer or a calf, as an eagle does a hare or a lamb. M. de Condamine says, he has frequently seen them in the mountainous parts of Quito, hovering over a flock of sheep, and imagines that they would have attempted to carry some of them off, had they not been prevented by the shepherds. This bird is of a brown colour, with a white ruff round the neck, and on the head a brown comb, but not indented like that of a cock. Some naturalists have classed it among the vultures, because its neck and head are bare of feathers; but in fierceness and courage, as well as in all its habits and disposition, it seems rather to resemble the eagle. The condor, requiring a wide space for the expansion of its wings, seldom frequents the forests, but chiefly resides in the mountains, whence it occasionally descends into the plains near the sea-shore, in search of supplies.

THE VULTURE,

as well as the condor, is allowed to hold only the second rank in the class of rapacious birds, and is placed after the eagle, not from any inferiority in size and strength, but from being less generous and bold. The vulture may be easily distinguished from all birds of the eagle kind, by the nakedness of its head and neck, which are covered only with a very slight down and a few scattered hairs. Its eyes are more prominent than those of the eagle: its claws are short and less hooked: its attitude less upright, and its flight more heavy.

If, however, the vulture be thus distinguished from the eagle by its conformation, it differs still more from that noble bird in its habits and disposition. The eagle, unless violently pressed by hunger, never stoops to carrion, nor devours any thing but what is obtained by its own pursuit; the vulture, on the contrary, is indelicately and indiscriminately voracious. It seldom attacks living animals when it can obtain a supply from those that are dead; and seems to delight in carrion and putridity. It is frequently known to root up newly made graves, and devour the dead carcases they contain. The sense of smelling is in these





birds exceedingly acute; and they can scent any carrion at a very great distance.

Of the vulture, as well as of the eagle, there are many varieties. The golden vulture measures four feet and a half in length. The neck, belly, and breast are red: but toward the tail the colour becomes more faint; the back is black, and the wings are of a yellowish brown. This species, together with the brown and ash-coloured, are natives of Europe. The spotted and black are the most common in Egypt; but the bearded, the Brazilian, and the king of the vultures, are peculiar to America. Many other varieties might be added, which it would be unnecessary to describe, and even tedious to enumerate. You have, my dear Sir, already observed, in your survey of the quadruped tribes, that nature is infinitely diversified, and in taking a view of the volatile race, you will find that diversity not less visible and striking.

Of all living creatures, no two are more at enmity than the vulture of Brasil and the crocodile. This terrible amphibious animal, which in the rivers of South America grows to the monstrous size of twenty-seven feet in length, lays its eggs to the number of a hundred, or two hundred, in the sands on the side of a river, where they are hatched by the heat of the climate, and at the same time takes every precaution to hide from all other animals the place where she deposits her burden. In the mean while numbers of vultures sit silent and unseen in some neighbouring forest, and view the operations of the crocodile, in the pleasing expectation of plunder. They patiently wait till she laid the whole number of her eggs, and, after having covered them with sand, is retired to a convenient distance. Then, encouraging one another with ferocious cries, they pour down altogether, hook up the ground in a moment lay the eggs bare, and devour the whole breed.

To the eye of superficial observation the vulture would appear one of the most noxious and disgusting animals in nature; but a close inspection will discover

its great utility, and add to the number of proofs that creative wisdom has made nothing without an appropriate design.

This bird; although totally unknown in England, abounds in many countries of Asia and Africa, especially in Arabia and Egypt. In these countries, particularly the last, they are of great public benefit; and numerous flocks of them are always hovering in the neighbourhood of Grand Cairo, where it is not permitted to destroy them. The service which they render to the inhabitants, consists in devouring all the carrion and filth of that great city, which, in that saltry climate, would otherwise soon putrify and corrupt the air. In all countries, indeed, which they frequent, they are of singular service, not only in devouring all the carrion, but also in destroying an incalculable number of crocodiles, serpents, and other noxious reptiles, that in hot climates are extremely prolific. The inside down of the vulture's wings is also exceedingly fine, and is converted into a warm and comfortable kind of fur, which is often sold in the Asiatic markets. Thus, my dear Sir, you may perceive that this bird, which is so rapacious and so indelicate, fills a station of great utility in the created system.

THE FALCON,

so little noticed at the present day, was, among our ancestors, held in so high estimation, that in old paintings it is the criterion of nobility, and a person of rank seldom stirred out without his hawk on his hand. So lately as the reign of James I. Sir Thomas Allenson is said to have given a thousand pounds for a cast of hawks; and such was in general their value, that in the reign of Edward III. it was felony to steal a hawk. To take its eggs even in a person's own ground, was imprisonment for a year and a day, together with a fine at the king's pleasure. The expence which attended the sport of hawking was very great, and every thing relating to it was considered of great importance. Among the old Welch princes, the king's falconer was the fourth great officer in the

state; but, notwithstanding his honours and emoluments, he was forbidden to take more than three draughts of beer from his horn, lest intoxication should cause a neglect of his duty.

Of the different kinds of hawks used for this diversion, we now know little more than the names, but the

GREY FALCON

was that which in elegance and size excelled all the rest. Its throat is of a delicate white, and the ground colour of its whole plumage is the same, but variegated with dusky hues, spots and bars. This elegant bird is an inhabitant of the northern districts of Scotland, and when falconry was fashionable, it was held in high estimation. In this, as well as the other tribes of animated nature, a number of varieties exist.

THE KITE

is a bird of the rapacious kind, for which the good house-wives and breeders of poultry have an implacable dislike. He flies round and round to reconnoitre a breed of chickens, and then on a sudden darts like lightning on one of the unresisting little creatures, and in a moment carries it off, in spite of the cries of the hen, which has not a power of wing sufficient to enable her to mount into the air and pursue the plunderer. The kite may be easily distinguished from all other birds of prey, by his forked tail, as well as by his slow and equable motion on the wing. Its length is about twenty-seven inches, and the expansion of its wings nearly five feet. It usually builds its nest in woods, especially in mountainous countries. The high soaring of the kite is considered as a prognostic of dry weather, and Lord Bacon's authority sanctions the opinion.

THE BUZZARD

in its habits and disposition, resembles the kite, and is not much inferior in size; its length being about twenty-two inches, and the full expansion of its wings about five feet. This bird is sluggish and inactive. It feeds on birds, rabbits, moles, and mice. In summer he lives chiefly by robbing the nests of other

birds and sucking their eggs; and the indolence of his disposition causes him, in general, to prefer acquisitions that are easily made, before what must be carried by laborious pursuit.

Of the buzzard, kite, and hawk kind, above seventy species, more or less diffused in different countries, have been enumerated by naturalists; but their general propensities being nearly the same, preclude the necessity of a particular delineation; and I have mentioned the great number of varieties, merely as an additional instance of the endless diversity of Nature's works.

I shall now lead you to a view of a different kind of rapacious birds, which, although of propensities similar to those of the last described class, have different habits and a different mode of living. These are the owl kind, a sort of nocturnal robbers that are scarcely ever seen in the day, but prowl about in the night, and take their prey by surprise during the hours of rest and seeming security.

All birds of the owl kind have one common mark by which they are distinguished from all others. Their eyes like those of tygers, cats, and the rest of that kind of quadrupeds, are formed for nocturnal vision. Their sight is dazzled by the glare of day; but they do not see best when it is totally dark, as some have imagined. The dusk of the evening, or the mild glimmering of moon-shine, afford them the greatest facility of distinguishing their prey, and such are the seasons when they make the most successful depredations.

Naturalists commonly distinguish birds of the owl kind, by disposing them into two grand divisions, those with horns, and those without. These horns are nothing more than a few feathers standing upright on each side of the head: among these, the great horned owl is entitled to the pre-eminence. It appears at first view scarcely inferior to the eagle in size, but on a closer inspection is found to be much less. Indeed, all sorts of owls are enveloped in so great a mass of feathers, as to appear much larger than they





Bustard.



owl.

are. The eyes of the great horned owl are large and transparent, and encircled with an orange-coloured iris: its ears are large and open: its plumage is of a reddish brown, marked on the back with black and yellow spots, and with yellow ones alone on the belly. This bird has sometimes been seen in Scotland, and also in Yorkshire; but it is not common in any part of England. It inhabits inaccessible rocks and deserted places, such as ruinous castles and unfrequented caverns; and preys upon hares, rabbits, and all kinds of feathered game.

Next in size is the common horned owl, which, like the former, appears much larger than it is, on account of the fulness of its plumage. When its wings are expanded, their extent from one extremity to the other is about three feet, and its horns are composed of six feathers on each side, of about an inch in length. Its colour is a reddish brown, with a mixture of white, and their legs are feathered down to the toes. These birds seldom take the trouble of making a nest, but generally take possession of some deserted one, which has been occupied by the magpye, or the buzzard. They lay four or five eggs. The young are at first quite white, but come to their colour in about fifteen days. This kind of owl is common in France and England. There are several other varieties of the horned owl, which I shall omit, and briefly mention two or three of the tribe which are without horns.

THE WHITE, OR COMMON BARN OWL,

is the most generally known of any of this kind, as it may be said to be almost domesticated. It seldom hoots, but often screams tremendously. It generally haunts barns and granaries, where it renders great services to mankind, by clearing those places of the mice, and other vermin which resort thither, and are so destructive among grain.

THE IVY, OR SCREECH OWL,

is that to which the gloomy apprehensions of mankind have attributed the power of presaging death or calamity; and the writers of poetry and romances, in or-

der to render their scenery more impressive, have, in conformity to popular superstition, frequently introduced it into their descriptive representations, when some melancholy scene was to be displayed. The circumstance which has caused this bird to be accounted ominous, appears to be that of its screaming in a tremendous manner, together with its natural propensity of approaching toward a window, where it sees a light at a late hour. As lights are generally kept continually burning in the chambers of the sick, and the screech owl prowls about in the dead time of the night, it is no wonder, that in places where they are numerous, they may sometimes have been attracted by the light, and have approached the house or the windows, and uttered those screams which are natural to it, in consequence of fright or surprise. Such a circumstance would be very apt to terrify a timid invalid, or an ignorant nurse, and from this source might easily be derived all the absurd notions which have prevailed concerning the ominous nature of the screech owl.

Mr. Pennant, in his *Arctic Zoology*, observes, that the Mogul and Kalmuc Tartars pay almost divine honours to this bird; as attributing to it the preservation of Jenghis Khan, the founder of the empire. This prince having been surprised and put to flight by his enemies, was compelled to shelter himself in a copse; and a screech owl settled on the bush under which he was hidden. His pursuers, judging that a bird of that species would not perch where a man was concealed, passed the spot, and thus suffered the prince to escape. His countrymen thenceforth held the owl sacred; and to the present day the Kalmucs adorn their heads with a plume of its feathers on all solemn festivals.

This bird, which is nearly of the same size as the white, or common barn owl, is distinguished from the latter species, by scarcely any other mark than the colour of its plumage, which is a kind of mixture of iron grey and tawney; and my principal reason for introducing it to your notice, was to induce you to

observe and despise the absurd ideas of weak and ignorant minds. Indeed, I believe you are, notwithstanding your juvenile years, already sufficiently enlightened to laugh at the tales of superstition. I can also assure you, that the screech owl is a very harmless bird: it preys solely on small birds, mice, or reptiles: and never either procured or foretold the death or disaster of any human beings, whatever nurses and gossips may think of the matter.

I shall here leave you awhile to laugh at the notions of old women, or of men whose minds are as weak and as ignorant as theirs, while I prepare something new for your entertainment, and most affectionately remain,

Dear Sir,

Your's, &c.

LETTER XLIV.

—————"The careful hen
Calls all her chirping family around,
Fed and defended by the fearless cock;
Whose breast with ardour flames, as on he walks
Graceful, and crows defiance."

DEAR SIR,

I AM now going to call your attention to a subject of great importance in the economy of civilized life, and present to your view a class of objects in the animal system equally curious and useful.

From the most rapacious class of birds, we are now, my dear Sir, making a transition to those which are the tamest, and which not only contribute to the delicacies of the table, but furnish articles of commerce, and are consequently of great advantage to human society.

It is obvious that birds of the

GALLINACEOUS, OR POULTRY KIND,

exhibit a complete contrast to those which we have been hitherto occupied in contemplating.

Amidst the immensity of nature's works, and the endless varieties displayed in the world of life, there is not perhaps, my dear Sir, a more evident proof of design, or a more conspicuous display of infinite Wisdom, in the adaptation of means to ends, and of animal mechanism to a specific purpose, than is exhibited in the internal and external conformation of the last described class of birds, and of those whom we are now about to survey. In order to raise our minds to the admiration of the great Creator, whose works are the index of his attributes, let us, my dear Sir, for a moment indulge a laudable curiosity in the examination of this interesting subject.

In our general remarks on the volatile race, we have already observed the wonderful coincidence between their conformation and the mode of life to which they are destined. In birds of the rapacious kind we have seen that the form and strength of their beaks and claws, their fierceness of disposition, and all their ferocious propensities, evidently pointed out their destination; and in the gallinaceous, or poultry kind, we shall discover the same exhibition of an all-wise design. These are without the hooked bills and formidable talons of the bird of prey, and their internal conformation admits of a still more curious and important distinction. In the rapacious kind, digestion is carried on by means of a liquid in the stomach, which dissolve the aliment. In those which feed on grain the gizzard is the principal instrument that grinds and reduces it to pulp. The wings of the poultry kind are short and not calculated for a long flight, which prevents them from wandering, and impels them to seek for happiness at home. Their bills, which are incapable of annoyance or destruction, are perfectly adapted to their manner of feeding. Their toes are made for scratching up seeds or grain, but not for tearing to pieces animal food. As the predaceous tribes are formed for war and depredation, these are equally fitted for peace, accordingly their contentions are trivial, and, excepting the cock, we seldom find them engaged in violent disputes. They are also





Turkey.



Hen.

without that unconquerable propensity to liberty which in birds is so general. The poultry kind, if well fed, seldom desire to range, and from the first moment of their confinement, seem satisfied if their supply of food be plentiful. Their increased plumpness in such situations, shews their contentment, while the wilder species when cooped up in cages, unless inured to it when very young, fall into languor, and sometimes pine to death amidst the greatest profusion of the most delicate food. These circumstances, my dear Sir, evidently display the infinite wisdom of the Author of Nature, in adapting every creature to its particular destination.

THE COCK

perhaps exhibits a greater number of varieties than any other animal of the feathered race; for scarcely any two birds of this tribe exactly resemble each other in plumage and shape. This may probably proceed from the effects of domestication, as of all the different kinds of birds the cock seems to be that which was first reclaimed from the forest, and taken to supply the luxuries of the table.

The time when the cock was first domesticated in Europe is not ascertained; but he is supposed to have been introduced from Persia. In the island of Tinian, and many others of the Indian ocean, this bird is found in his native state. In those islands, and in the woods of Malabar, his plumage was black and yellow, and his comb and wattles are yellow and purple. In those of the Indian woods, there is also another peculiarity,---their bones when boiled are as black as ebony; those of the European cock, on the contrary, are white.

No animal whatever displays greater courage than the cock; and in every part of the world, from which it is not yet banished by refinement and polished manners, cock-fighting constitutes one of the most popular diversions. In China, India, and the Phillipine islands, it is one of the principal amusements of the great; and in all parts of the East the highest ranks participate in an enjoyment which casts upon

humanity an indelible stain. In this country it was once a favourite pastime; but to the credit of the present age, it is very much on the decline, and it is to be hoped that the period is not far distant when it will be exploded even among the vulgar.

The hen, if well supplied with food and water, is said to lay about two hundred eggs in a year, which shews the importance of this bird in domestic economy. As a parent she excites admiration; for her affection towards her offspring, divests her of her natural timidity, and gives her both courage and strength. For the protection of her chicken she will venture to attack the horse, the hog, or the mastiff, and will not hesitate to fly at the fox.

It is a curious circumstance in the history of this bird, that at Grand Cairo they have a method of hatching eggs by an artificial heat, and thus produce six or seven thousand at a time. Being brought forth in a mild spring, which is warmer than our summer, the chickens thrive very well. It does not however appear that this could be carried into effect with success in our cold and variable climate, where although the little animals might be hatched without much difficulty, the greatest part of them would, in all probability, perish soon after their exclusion from the shell.

THE TURKEY

is one of the most remarkable birds in the poultry yard, on account of the singular appearance of its head, as well as of some habits almost peculiar to itself.

In this country the turkey when young is exceeding tender, and is reared with great difficulty; yet in its wild state it abounds in the forests of Canada, where the ground is covered with snow almost three parts of the year. In their native woods they are also much larger as well as more hardy than in a state of domestication. In beauty also they far excel the European breed. Their feathers, which are of a dark grey, and bordered at the edge with a bright gold colour, are woven by the savages of the country into cloaks for the ornament of their persons.





Peacock.



Quail.

Turkeys do not seem to possess, either in their wild or domesticated state, any very great degree of instinct. They may, however, be ranked among the most useful fowls of the farm yard; for, notwithstanding the tenderness of their constitution when young, they are hardy when grown up, and feed themselves with little trouble or expense to the farmer. Some of them, especially those of Norfolk, which are reckoned the finest in this kingdom, frequently weigh from twenty to thirty pounds, and constitute an excellent article of food.

THE PEACOCK,

when its tail is expanded, exhibits a spectacle of which no description can possibly give a just idea; to form an accurate conception of the beauty of its appearance the living object must be contemplated. However, although the form of this bird be completely elegant, and its plumage adorned with the most brilliant colours, as well as diversified with an endless variety of tints and shades, its voice is extremely harsh and disagreeable. Its insatiable gluttony also serves to counterbalance the only merit it can claim, its incomparable beauty; and it is actuated more than any other of the gallinaceous species by a spirit of depredation.

Like the rest of the poultry kind, the peacock feeds chiefly on grain, and has a strong predilection for barley. It eagerly seeks for insects and tender plants, and if it does not find sufficient supply of its favorite food, it will lay waste the labours of the gardener, and destroy, in one day, the work of many months.

The peacock, or the peahen, has in some countries been esteemed as an article of luxury for the table; and although its flesh be not at this time considered as a delicacy, it is certainly far from being disagreeable, and is said to resist putrefaction longer than any other animal. In the time of Francis I. king of France, it was a custom to serve up a peacock at the tables of the great, not for food but for ornament. The skin was first carefully stripped off, and the bo-

dy, being prepared with the hottest spices, was again covered with it; thus retaining all its plumage in full display, uninjured by the preparation. The bird thus prepared was often preserved for several years without putrefaction, and served to add splendor to successive entertainments.

The peacock is a native of India and the other oriental countries of Asia, where it is yet found in its natural state; and numerous flocks of them are still to be seen wild in the islands of Java and Ceylon. So beautiful a bird was not, however, suffered long to remain concealed in its native retreats; and we find that so early as the time of Solomon it was made an article of commerce, and is numbered among those which were imported by his fleets. That prince was probably the first who introduced the peacock into Judea; and the Tyrians, his partners in trade, undoubtedly imported it into their country; but it is probable that it had been already brought to Tyre, and no doubt to Egypt also, previous to that period. The Greeks also shewed a strong predilection for this bird, and we are told that the first exhibition of a peacock at Athens, induced many persons to travel from Lacedemon to that city, to gratify their curiosity with the sight of so beautiful an object. Such a curiosity indeed, my dear Sir, was laudable; for so magnificent a display of the work of the Creator, especially when accompanied with the surprise of novelty, certainly merited the contemplation of a philosopher.

Of this curious bird there are several varieties, but the peacock of Thibet is universally allowed to be the most beautiful of all the feathered race. Its colours are blue, yellow, red, and green; all blended with the most artificial exactness, and forming the most pleasing combinations, in which nature seems to have exerted all her skill, and exhibited all her beauties.

THE PHEASANT,

next to the peacock, holds the second rank in the gradation of beauty among the feathered tribes. To make a minute comparison between the most beautiful of each species, the admirer of nature's works,

would be puzzled to determine which of the two has the greatest claim to pre-eminence. Nothing, indeed, can satisfy the eye with a greater variety and richness of ornament than the plumage of the pheasant, whether we regard the dazzling brilliancy of its colours, or their elegant mixture. It far surpasses all the efforts of the pencil to exhibit tints so glossy and so bright, or points so finely blended.

Every scholar is acquainted with the story of Solon the Greek philosopher and Cræsus, king of Lydia. We are told that the monarch being seated on his throne, adorned with all the appendages of terrestrial grandeur, asked Solon if he had ever seen so magnificent a spectacle? The philosopher, nothing moved by the pomp and pageantry with which he was surrounded, coolly answered that "after having seen the plumage of the pheasant he could not be astonished at the sight of any other finery." This answer of the Grecian sage is worthy of being recorded: it was well calculated to remind that powerful and opulent monarch of the inferiority of all artificial ornaments, when compared with the magnificence of nature, and of the insignificance of all human greatness and splendor before the Creator and Sovereign of the universe. You will, my dear Sir, also remember that a far greater personage than the Greek philosopher has taught us the same important lesson, in saying that all the magnificence of Solomon was not equal to the splendor of the lilies.

The beautiful bird which thus displays the energies of nature merits a particular description. Its eyes are surrounded with a ring of scarlet, sprinkled with small specks of black, and the iris yellow. The fore part of the head is clothed with blackish feathers, mixed with a shining purple; the top of the head and the upper part of the neck are tinged with a darkish green, which bears a silky gloss. In some the top of the head is of a shining blue, and the upper part of the neck appears sometimes blue and sometimes green, as it is differently placed to the eye of the spectator. The feathers of the breast, the shoulders,

the middle of the back, and the sides under the wings, have a blackish ground, and their edges are tinged with a colour exquisitely beautiful, which appears sometimes black and sometimes purple, according to the different reflections of the light: under the purple there is a transverse streak of gold colour. The tail is about eighteen inches long. The legs, feet, and toes are of the colour of horn, and two of the toes are connected with a membrane: the legs are furnished with spurs of a black colour, and shorter than those of the cock. The male is far more beautiful than the female.

The beauty of the pheasant is not its only excellency. Its flesh is one of the greatest dainties, and its wholesomeness is equal to its delicacy. When full grown it seems to feed indiscriminately on every thing that falls in its way, and such is its voracity that it is said to devour insects and reptiles, as well as seeds and grain. In the woods the hen lays eighteen or twenty eggs in a season, but not above ten in a domestic state.

Of this bird, as of most others, there are many varieties; but among all these the golden pheasant of China excels in beauty. It is somewhat less than the common pheasant, being not more than two feet nine inches in length. The general colour of its plumage is crimson, and its head is adorned with a splendid yellow crest, the feathers of which have the appearance of glossy silk. The back and rump are of a fine gold colour; the scapulars are blue, and the quills brown, marked with yellow. The tail is twenty-three inches long, and its colour chesnut speckled with black. The hen is far inferior in beauty, the general colour of her plumage being brown. It appears to be a hardy bird, and will live and propagate in our climate.

The Argus pheasant is also a magnificent bird. It derives its name from its quills being ornamented with eyes resembling those of the peacock's train. This bird, as well as the former, and also the superb pheasant,

sant, the predominant colour of which is a beautiful green, are all natives of China.

There is another beautiful bird, a native of South America, which some naturalists class with the pheasant. It is called the trumpeter. The individuals of this species vary in colour. It is very familiar, and will follow a person about like a spaniel. It feeds on bread, fish, or flesh, and is reckoned as delicious food as the common pheasant.

The curassow which comprehends five or six varieties, bears a strong resemblance to the pheasant although most naturalists agree in considering it a distinct genus. In Peru and Mexico this kind is very numerous both in a wild and domestic state.

The pheasant was originally brought into Europe from the banks of the Phasis, a river of Colchis, in Asia Minor, and thence has derived its name. Though removed from its natal soil, it thrives well in our climate, where, still retaining its attachment to freedom, it lives wild in our forests and parks, of which it constitutes an enlivening ornament. It labours however, under one disadvantage, which prevents its multiplication in such a degree as might otherwise be expected. The slowness of its rising, from the ground, caused in a great measure by the length of its tail, renders it extremely liable to be destroyed by the weazle, the founart, and other animals of that kind.

If the increase of our Pheasants were not prevented by their depredations, it might have been expected, from the numbers introduced into some parts of the country, that our forests would have glittered with the dazzling brilliancy of their plumage.

THE BUSTARD

is the largest land bird that is a native of Great Britain, or even of Europe. Its weight varies considerably: some have been found of not more than ten pounds, others weigh from twenty to thirty. This species appears to have been pretty generally diffused; for according to Plutarch it is found in Lybia, in the environs of Alexandria, in Syria, in Greece,

and in Spain. It also abounds in some parts of France. In England their principal places of rendezvous are Salisbury plain, the heaths of Sussex and Cambridgeshire, and the Dorsetshire uplands. In those extensive plains, where there are neither woods nor hedges to screen the sportsman, the bustards enjoy security, and are often seen in flocks of fifty or more together. It is in vain that the fowler creeps along to surprise them, they have always centinels stationed in proper places to warn them of the first appearance of danger. But although they can seldom be shot, they are sometimes hunted and taken by dogs, when they are grown so fat as to be unable to fly without great preparation. This bird was once far more plentiful than at present. The increased cultivation of the country, and the deliciousness of its flesh have greatly contributed to thin the species; and it would, perhaps have been long since extirpated, had it not derived so great a degree of security from inhabiting only the most extensive plains, where its food is abundant, and where every enemy may be discovered at a distance.

The bustard appears much larger than a turkey; but its wings are not adapted to a perfect flight, their expansion not reaching above four feet; and though it can elevate itself in the air, it flies with some difficulty. Its head and neck are ash-coloured; the back is transversely barred with black ferruginous stripes; the belly is white, and the tail marked with broad bars of red and black. The female is not more than half as large as the male. The top of her head is of a deep orange colour, crossed with black lines.

THE GROUSE

comprehends about seventeen species, of all which the characteristic mark that distinguishes them from the rest of the poultry kind, is a scarlet skin above the eye. The firry forests and the barren heath are their favorite retreats; and since cultivation is so much improved and extended in these countries, they are only to be found on the moors of Yorkshire and



Partridge.



Partridge.



Westmoreland, the highlands of Scotland, and other extensive wastes.

THE COCK OF THE WOOD

is in size and importance the first of this tribe: it is nearly as large as a turkey, and frequently weighs above fourteen pounds; but the female is much smaller. The head and neck are ash-coloured, and crossed with black lines: the body and wings are of a chesnut colour, and the breast is of a blackish glossy green. The female is different in colour, being red about the throat, with the head, neck, and back crossed with red and black bars: the belly is striped crosswise with orange and black, and the tips of the feathers are white. The black cock is about the size of a common hen, and when full grown weighs about four pounds. The moor fowl or red game, which is peculiar to the British islands, weighs about nineteen ounces. All birds of the grouse kind, among which the white game or ptarmigan must be included, delight in the most barren heaths, the highest hills, or the thickest forests. Their food is mountain-berries and the tops of the heath plants; and their flesh is exquisitely delicate.

THE PARTRIDGE

is a bird that is every where well known, being common in every climate and in every country: in the hyperborean regions, as in the torrid-zone. It seems to adapt itself to each climate where it resides. In the countries within the arctic circle it is brown in summer, but in winter changes its colour to white, and it acquires a new covering of soft warm down, which at that season grows underneath its feathers. The wisdom and goodness of the Author of nature are exceedingly conspicuous in this particular, that in the polar regions all animals acquire a covering perfectly adapted to the rigours of the climate, a circumstance which shews that the providential care of the the Creator extends to all his creatures in every situation.

Of partridges there are more than twenty species; all of which may, however, be arranged in two grand

divisions, the red and the grey: the former is the largest, and often perches on trees, the latter, which, in this country is the most common, always sits on the ground. To give any description of a bird so generally known would be superfluous, and no one is ignorant of the excellency of the food which its flesh affords.

THE QUAIL

is much smaller than any other of the gallinaceous tribes, being not more than half so large as the partridge, although much resembling its shape. Its head is black with a mixture of dusky brown; the breast is of a pale yellow, with a reddish cast and spotted with black, and the back is marked with lines of pale yellow.

Quails are exceedingly quarrelsome, and often have obstinate contests among themselves. Quail fighting was once a favorite diversion among the Athenians, and we cannot but lament that so cruel a pastime was encouraged among so polished a people. Its flesh, however, was by them esteemed unwholesome, and consequently not used for food; but they reared great numbers of them for the pleasure of seeing them fight. Modern manners have in this respect entirely reversed the sentiments of mankind. The courage of the quail is now disregarded, while its flesh is esteemed an exquisite delicacy.

Having conducted you through the pleasing survey of a class of the feathered creation that enlivens our forests and heaths, or embellishes the farm yard, you will undoubtedly confess that the view is delightful; but when you consider the exquisite food with which they furnish our tables, your gratitude will be excited towards the Author of Nature, for his parental goodness and indulgent munificence.

I cannot make a more appropriate conclusion, than in recommending to you the habit of making such reflections, assuring you at the same time, that with unfeigned affection,

I am, dear Sir,

Your's, &c.



Quail.



Raven.



LETTER XLV.

"Hark! 'tis the raven's dismal croak,
 My boding breast is filled with fear;
 Yet once beneath that spreading oak,
 The bird of woe I smil'd to hear."

MRS. ROBINSON.

"Oft have I lov'd to mark the rook's slow course,
 And hear his hollow croak."

SOUTHEY.

DAER SIR,

I SHALL now proceed to review a class of volatiles, different from each of the former, but partaking in some degree of the nature of both.

THE PIGE KIND

is that race of birds which are generally considered as the least beneficial to man. Few of them, except the pigeon, contribute to furnish us with food, while numbers make free with the fruits of our industry. We cannot, however, see through the vast and complicated plan of Divine wisdom, and perhaps we are more indebted to this noisy, restless, chattering tribe than we imagine, and derive from them benefits of which we are ignorant.

THE RAVEN, THE ROOK, AND THE CARRION CROW are so generally known that any description of them would be superfluous, and tend rather to obscure than improve our ideas. The raven is the largest of the three, and is distinguished from both the others by his bill being more hooked. As for the rook and the carrion crow, they so nearly resemble each other as not to be easily discriminated. The rook often suffers on that account, and is frequently destroyed instead of the other, to which he is in size and colour, so nearly similar.

The raven is a strong, hardy, and active bird, uninfluenced by any change of weather, and capable of supporting the rigors of every climate. He is not oppressed by the sultry heats of the torrid zone, nor

benumbed by the intense cold of the polar regions; although, like many other animals in those parts, he changes his colour and acquires a whiter plumage. That a bird which is so little affected by any inconveniences of climate should be universally diffused, is nothing wonderful; and accordingly we find the raven an inhabitant of every region of the globe. The sagacity of this bird is equal to his strength and vigor; and when tamed he is capable of receiving instruction in a wonderful manner, and of performing things almost incredible. He may be trained to fowling like a hawk, taught to fetch and carry like a dog, to speak like a parrot, and what is still more extraordinary, to imitate any vocal music. A modern author of great repute says he has heard a raven sing a song with great distinctness, truth and humour.

The raven, when entertained as a domestic, has indeed many amusing qualities. Being inquisitive and impudent, he visits every corner, affronts the dogs, drives the cats from one place to another, plays his pranks among the poultry, teazes every animal around him, and is a constant attendant on the cook-maid. She indeed is his principal favorite, and to her his attachment is unalterable; although he does not hesitate to incur her displeasure by snatching from her a delicate morsel. When wild the raven is a voracious plunderer, when domesticated he is by nature a glutton, and by habit a thief; he purloins every thing to gratify his appetite, and even hoards what he cannot convert to any use; for tea-spoons, rings, and pieces of money are often found in his secret treasury.

The longevity of the raven is equal to that of any of the feathered race, or perhaps of any other animal; for birds are in general supposed to live longer than quadrupeds; the raven has been known to live more than a hundred years, and, indeed, as it is endowed with a robust constitution, a good appetite, and great activity, it seems to possess all the qualities conducive to long life.

From the remotest antiquity a number of superstitious notions respecting this bird have prevailed,





C. n. n.



Mag. p.

which, notwithstanding the general improvement of the human mind and the diffusion of knowledge, are yet to be found among the ignorant populace of most countries; but I shall not, my dear Sir, amuse you with the tales of old women, which I know you have good sense enough to despise. Some suppose that the respect paid to it in Sweden, where it is held sacred and no one offers to molest it, is founded on the circumstance of its being selected for the purpose of feeding the prophet Elijah.

The Romans, however, who paid no regard to our Scriptures, had also their prejudices in regard to the raven, as they accounted it ominous, and merely from motives of fear held it in the greatest veneration. The origin of these absurdities is wholly unknown; for it is impossible to trace the progress of superstition, and the excentricities of its operations on weak and uncultivated minds.

Of the carrion crow and the rook I shall say but little, as they are both universally known, and shall only observe that the former lives on carrion, but the latter on seeds and grain.

The rook delights to be near the habitations of men, and their bustle and cawing enlivens the rural scene, for which reason many country gentlemen would not wish to banish them from the vicinity of their habitations.

THE MAGPIE

is universally known in this country, and it would only be a waste of time to describe a bird with which every school-boy and every milk-maid is perfectly acquainted. It will therefore, my dear Sir, be sufficient to remark a few of its most general propensities.

In all its habits it discovers a degree of instinct superior to most other birds; and even the globular construction of its nest displays extraordinary sagacity. The magpie is noisy, cunning, mischievous and insolent: it preys upon animals which are unable to make resistance, and teases such as are larger and stronger than itself. It is extremely voracious, and particularly addicted to the devouring of eggs. Those of

domestic fowl and of small birds which build in the hedges, very frequently fall a prey to this cunning depredator. In its domestic state it preserves its natural character without any alteration, and the same propensities attend it in the cage that distinguish it in the woods. Being one of the most cunning, it is also one of the most docile of birds. Those who teach it to speak have a custom of slitting its tongue, which is equally cruel and absurd, as it causes the poor creature to suffer pain without in the least improving its speech. It sometimes learns to speak very distinctly, but its sounds are too shrill to be an exact imitation of the human voice, which the raven and the parrot can more perfectly counterfeit.

THE JAY

may be reckoned among the most beautiful birds of the British isles. Its forehead is white streaked with black, and its head is covered with long feathers, which it can at its pleasure erect into a crest. The whole neck, back, belly, and breast are of a faint purple dashed with grey. The wings are most elegantly barred with blue, black, and white, and the tail is generally quite black. Like the magpie it feeds on small birds or fruits, is extremely docile, and learns to speak with facility.

Mr. Bewick informs us that a jay kept by a person in the north of England, had been taught at the approach of cattle, to set a cur dog upon them, by whistling and calling him by name. One winter, during a severe frost, he excited the dog to attack a cow which was big with calf, when the poor animal fell on the ice, and was much hurt. In consequence of this accident, the jay was complained of as a nuisance, and its owner was compelled to destroy it.

This bird, as well as the magpie, being extensively diffused, admits of a number of varieties, which naturalists have enumerated, and perhaps still more with which they are unacquainted. It is impossible to follow Nature through all her varieties, which, in every





Swallow



Woodpecker.

species of animal life, proclaim the plastic hand of Nature's God.

THE KING FISHER, OR HALCYON,

is well known in this country, and is one of the most beautiful birds of these northern climates. It is not much larger than a swallow: its legs are, according to our superficial notions of elegance, too small, and its beak too long in proportion to its body; but both are perfectly adapted to its mode of living and procuring its food. The brilliant colours of its plumage, however, are sufficient, even in our partial estimation, to atone for whatever caprice may deem inelegant in its form. The crown of the head and the outside of the wings are of a deep blackish green, with bright azure spots; the back and the tail are of the most resplendent azure: the under part of the body is orange-coloured: and a broad mark of the same passing from the bill reaches beyond the eyes. In viewing the beautiful plumage, the slender legs, and diminutive size of this bird, you would scarcely, my dear Sir, suppose it to be one of the most rapacious little creatures that nature produces. This, however, is, in reality, the case. It is almost continually on the wing, hovering over the rivers and lakes, where it catches small fishes in surprising quantities, by darting down upon them with inevitable certainty. While it remains suspended in the air in a sun-shiny day, its plumage exhibits a beautiful variety of the most dazzling colours.

Of this bird, our own and foreign countries exhibit not less than thirty-six varieties.

THE CUCKOO

is one of the most noted of the feathered race; and, although it cannot boast any great variety or beauty of plumage, is remarkable for the elegance of its form and the peculiarity of its habits. It is somewhat less than a pigeon, but in its form resembles a hawk, and its colour is a greyish blue. Its note is universally known; and as it announces the approach of summer, is always listened to with pleasure: but the particulars of its history are involved in obscurity.

and the country to which it migrates is yet unknown.

The cuckoo appears to be a bird of the rapacious kind: Reaumur, who brought up several, found them to be carnivorous; for flesh and insects constituted their favorite aliment, and they would not feed either on bread or fruit. The voracity of the cuckoo is not, indeed; to be wondered at, when we consider the capaciousness of its stomach, which is enormous, and reaches from the breast bone to the vent.

The female cuckoo makes no nest of her own, but invading that of some other bird, very often of the wagtail or the sparrow, destroys the eggs, and substitutes her own in the place. She seldom lays more than one, which is speckled, and similar to that of the blackbird in size. The bird, on its return, not discovering the cheat, nurses the egg of her insidious invader with the same assiduity as if it were her own, and when the changeling is excluded from the shell, continues to feed it with parental tenderness, ignorant that she is nursing an enemy to her race, and a destroyer of her future progeny.

When the young cuckoo is fledged, it quits its suppositious parent, and follows its native propensities: What becomes of this tribe in the winter season is wholly unknown. Some assert that it takes refuge in the clefts of rocks, hollow trees, and other similar retreats, where it remains in a torpid state until the return of spring. Willoughby relates a curious story of some logs of willow being laid on the fire, when a cuckoo, being revived by the sensation of heat, began to utter its notes, to the astonishment of all who were present. A number of similar stories have been related, and as it is frequently the case, the same tale has been often travestied, exaggerated, and multiplied into a number, through the love of the marvellous, or for the support of a favorite opinion. The most general, however, as well as the most probable supposition, is, that on the approach of winter, the cuckoo, as well as the swallow, migrates to warmer climates.

THE WOODPECKER

exhibits the most irrefragable proof of an All-wise

design in the adaptation of means to ends, and of animal construction to particular purposes, which is indeed visible in every part of the created system. Being destined to live chiefly on the insects which lodge in the trunks of trees, nature has furnished this bird with a bill of extraordinary hardness, sharpness, and strength. Its tongue also being of a great length, and terminating in a sharp, stiff, and bony point, dentated on each side, is peculiarly fitted for striking ants and insects, when forced from their cells. Its legs, being short and strong, are exceedingly well adapted to the purposes of climbing; and the toes standing two forward and two backward, are equally serviceable in holding fast to the upright trunks of trees. This bird, being destined to feed solely on insects, wants that intestine which anatomists call the cæcum, a circumstance peculiar to the woodpecker tribe.

When this bird discovers a tree that is likely to contain its favorite food, or appears fit for a habitation, wherein to lay its eggs and nurture its young, it immediately begins to make a round hole in the trunk, of about two inches in diameter. This is not performed by boring with its beak as with a gimlet, as some have asserted, but by constant and laborious picking, of which every one may be convinced who frequents the woods and forests where it resides, and sees its operations, or hears the noise which it makes in battering the trees. This bird very frequently attacks the ant-hill, and devours the industrious little insects, which have there formed a colony, and are far from apprehending so formidable an invasion.

Of this kind, naturalists have enumerated more than fifty different species, each of those admitting of a number of varieties, greatly differing in size, colour, and appearance, but agreeing in the characteristic marks already mentioned, and in the habits resulting from so peculiar a conformation. The woodpecker, which is the most common in this country, is about the size of a magpie: its throat, breast, and belly, are of a pale green; and the back, wings and

tail are of a deeper green, and mottled with a variety of colours.

As I am apprehensive of tiring you with the length of my letter, I shall, out of the immense variety which nature displays, endeavour to select a few choice subjects to enliven our future correspondence, and for the present conclude, with subscribing myself,

Dear Sir,
Your's, &c.

LETTER XLVI.

"The parrot learns to emulate our speech."
Hark! the hoarse pigeon tunes his notes to love."

AYON.

DEAR SIR,

THE objects which I am now going to present to your view, are some of the most curious which the feathered part of the creation affords. They will irresistibly attract your attention, and excite your admiration of the splendor of nature's works.

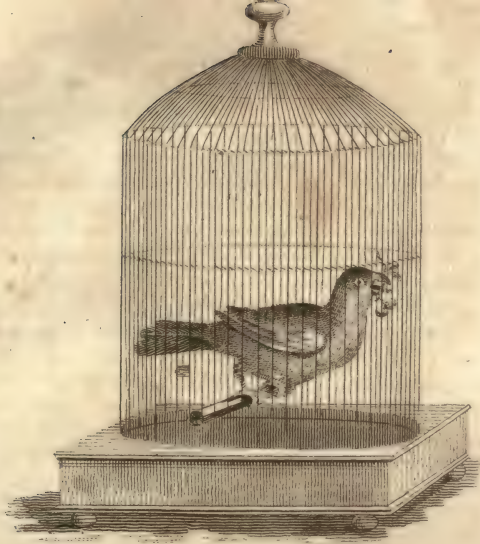
THE PARROT,

is, of all foreign birds, the best known in this country; and has always been held in estimation by the curious, as it possesses the singular advantage of uniting transcendent beauty with superiority of instinct and astonishing docility.

The facility with which this bird learns not only to speak, but to retain and repeat a great number of words, is surprising. We are assured that a parrot has been taught to rehearse a whole sonnet from Petrarch.

Many wonderful stories have been related of this creature's sagacity and loquaciousness, among which I shall, for your amusement, select one, which appears so singular, that it would never have obtained credit, had it not been sanctioned by respectable authority.

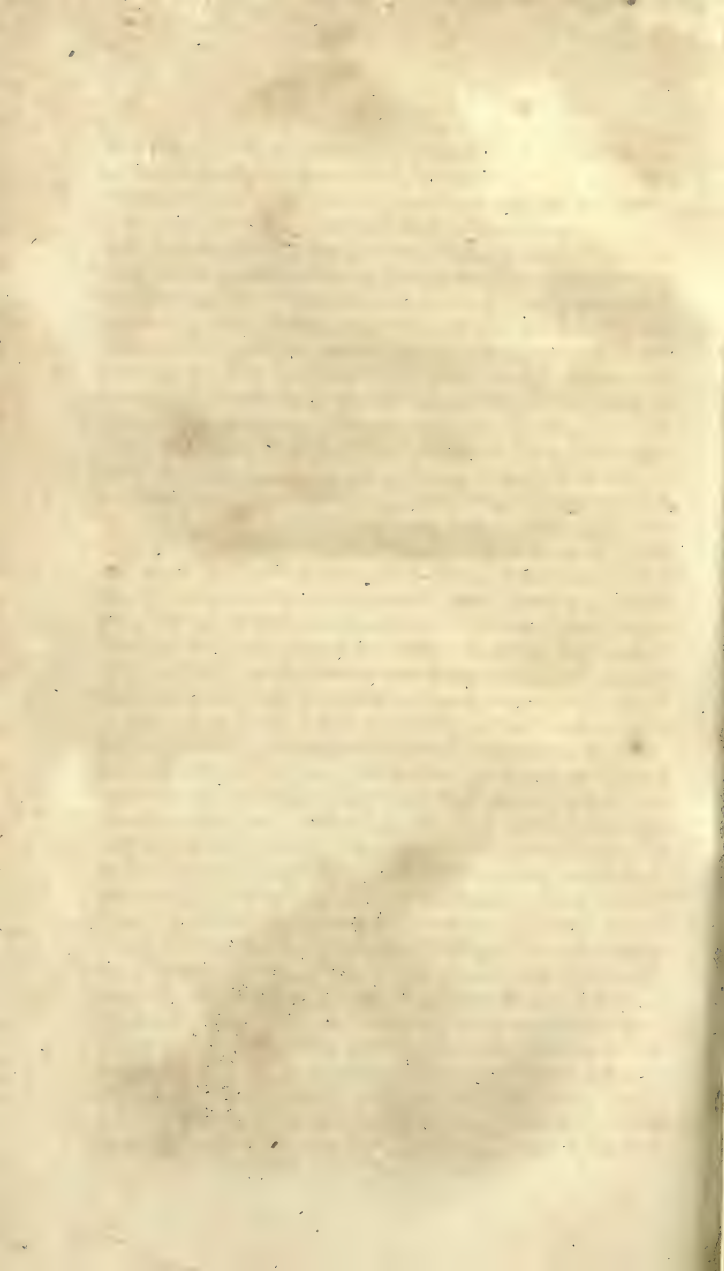
Willoughby tells us, that a parrot belonging to



Parrot.



Parrot of Pinar.



King Henry the Seventh, who then resided in his palace at Westminster, had learned many words and phrases from the passengers who took the water near that place. Sporting one day on his perch, the poor bird had the misfortune to fall into the Thames. He immediately called out as loud as he was able, "A boat, twenty pounds for a boat!" A waterman, hearing the parrot's liberal offer, made to the place where the parrot was floating, and took him up. The man, knowing the bird to be a favorite, insisted on the full reward it had promised, and agreed, that the matter should be left to its decision; which the parrot hearing, cried out "Give the knave a groat."

Linnaeus makes forty-seven, and Latham near a hundred and fifty species of this beautiful and sagacious bird; but probably no naturalist has enumerated one half of its varieties. The distinguishing characteristics, however, of the whole tribe, are, that the beak is hooked, and the upper, as well as the lower mandible, moveable; the nostrils placed at the bottom of the beak; the tongue fleshy and obtuse; and the feet furnished with two toes before, and two behind, calculated for the purpose of climbing and clinging to trees.

Notwithstanding the endless varieties found in this numerous tribe of birds, they are generally divided into four classes; the macaw, which is considerably the largest, and nearly equal to the raven in size; the parrot, properly so called; the lories, which are less than the parrot; and, lastly, the parroquet, which is the least of all, and of which some varieties are not larger than the common sparrow. Between these species the difference is rather in size than conformation; and they have all the same general habits.

In the tropical climates they are exceeding numerous. The forests swarm with their different varieties; and the vivid colours of their plumage are an additional ornament to the luxuriance of vegetation under those genial skies, and give an air of vivacity to the scene. Nothing in nature, indeed, can have a more beautiful appearance than forests of lofty trees, cloth-

ed with the most luxuriant foliage of an endless variety of forms and colours, swarming with parrots, and glittering with the brilliancy of their plumage.

THE BIRD OF PARADISE,

which has undoubtedly derived its name from its beauty, is a native of the Molucca islands, and, being confined to those remote regions of the east, has been very imperfectly known to the best European ornithologists, until Sonnerat, in his voyage to New Guinea, somewhat elucidated the subject. Of this bird, there are eight different species; but that which is best known, is the greater bird of paradise. This beautiful volatile, from the fulness of its plumage, appears to the eye nearly the size of a pigeon, although its body is not in reality much larger than that of a thrush. Its body and its tail are each about six inches long; and the wings are large in proportion to its other dimensions. The head, the throat, and the neck, are of a pale gold colour. The base of the bill, as also the head, is covered with fine black feathers, soft and glossy as velvet, and varying in colour with the different shades of light. The hind part of the head is of a shining green, mixed with gold colour. The body and wings are covered with beautiful brown purple and gold coloured feathers. The upper part of the tail is a pale yellow, and the undermost feathers are white, and longer than those above; but the appendage which chiefly excites curiosity, consists of two long naked feathers which spring from the upper part of the rump above the tail, and are generally about two feet in length. These are bearded only at the beginning and the end, the whole shaft for above one foot nine inches, being of a deep black; while the feathered extremity is of a colour which changes with the various reflections of the light.

In the Oriental islands which they inhabit, these birds are seen in large flocks fluttering through the aromatic groves. They are sometimes called the swallows of Ternate, from the rapidity of their flight, and their being constantly on the wing, in pursuit of flies and insects, which are their usual food.

The beauty and the rarity of this bird, has given rise to a number of fictitious tales, and a mass of fabulous description. The natives of the countries where they are found, observing the avidity with which Europeans purchased these birds when stuffed, having adopted the custom of cutting off their legs, asserted, that nature had not furnished them with those members, as they were inhabitants solely of the air, and nourished entirely by the dew of heaven. And what is astonishing, all these absurdities were for a long time believed.

The Malaysans, who make a trade of killing, stuffing, and selling these birds to the curious Europeans, generally conceal themselves in the trees, where they resort, and shoot them with arrows made of reeds, in order to damage as little as possible their beautiful plumage. When they have killed a number of these birds, they take out every part of their entrails, and run a hot iron up their bodies, which dries up the juices. They then stuff them with salts and aromatic spices, and offer them for sale.

Among the many different species of this bird, that called the king bird of paradise, is difficult to recognize in the variety of description, and the confusion of names. Buffon distinguishes two species, by the appellations of the king bird, and the magnificent bird of paradise; but, as they are both described of the size of a black-bird, it is probable that they are the same, and that the difference is only nominal or imaginary. The description, accompanied with a coloured plate, given in "The Young Gentleman and Lady's Magazine for March, 1799," represents the greatest part of the plumage of the king bird of paradise, as being of a beautiful and vivid carmine, all his colours of a soft and silky appearance, having the gloss of polished metal. The two shafts proceeding from the rump, are blackish, and not bearded, and extend very far below the tail and wings. Near the extremities, these singular appendages become bearded, and by an elegant convolution, form a pretty

large circle of a bright emerald colour, varying according to the shade in which it is viewed.

I have, my dear Sir, endeavoured to give you, from the best authorities, as accurate a delineation as possible of this singular bird, which has so long excited the curiosity of this part of the world, and afforded a puzzling enigma to European ornithologists. Having exhibited to your view the most striking display of the beauties of nature in the pie tribe, I shall close my description of that class, by calling your attention to a species, in which utility is joined to elegance of form and plumage, and which is therefore adapted to excite our admiration of the created system, and our gratitude towards the All-wise and bountiful Creator.

THE PIGEON

is so universally known, that any description of it would be a waste of time both to the writer and the reader; and indeed the variety of plumage which the tame kind displays, is so great, that it would exhaust the labours of the pen or pencil.

All the beautiful varieties of the pigeon are said to derive their origin from the stock dove, or wood pigeon, which is invariably of a beautiful ash colour, and the breast dashed with a fine changeable green and purple. These are the colours of the pigeon in its natural state; and from these simple but beautiful tints, the effects of domestication have produced a variety that words cannot describe, nor even fancy itself suggest.

The most distinguished varieties of the pigeon tribe, are the stock dove, the colours of which are already described, and which in size considerably exceeds the tame pigeon: and the ring dove, which is still larger, and receives its appellation from a beautiful white circle round the neck, above and below which, the contiguous parts are delightfully variegated with changeable colours. These almost always fly in large flocks, and are so wild, that all attempts to reclaim them have been ineffectual.

The turtle dove is the most celebrated of the whole race: it is considerably smaller than the common pi-

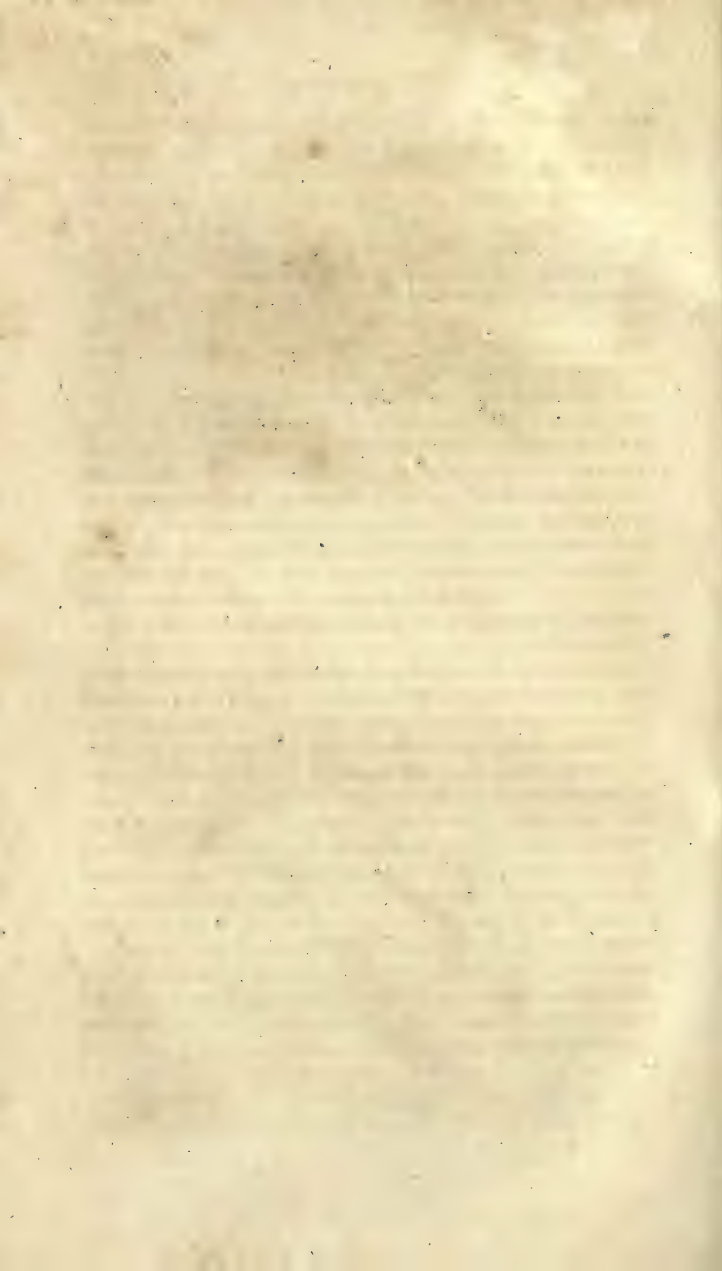


S. cal. w.



Vireo.

Redbreast.



geon; and its amiable inoffensiveness and inviolable fidelity to its mate, has furnished sentimental writers with the most beautiful allusions.

One of the most remarkable traits in the history of this kind of birds, is the custom which has sometimes prevailed, of employing the pigeon in carrying letters from place to place in time of war, and in case of sieges, when all means of communication were intercepted by the enemy. This was performed by a timely interchange of the birds, which, being let fly, immediately returned to their former abode. You will find in history several instances of this communication by carrier pigeons, which, however, are now rendered useless through the general adoption of fire arms. They are, however, the most expeditious carriers in the world, and have been known to perform a journey of forty miles in an hour and a half. They are still used in the east; and Thevenot says, that they commonly travel from Aleppo to Alexandria in Syria, in six hours, which is a distance of eighty-eight miles. The letters are generally fastened under their wings.

In order to ascertain with some degree of accuracy, the speed of these curious birds, a gentleman, some years ago, sent a carrier pigeon from London to a friend at Bury St. Edmund's, and along with it a letter, requesting that the pigeon, two days after its arrival, might be thrown up precisely at nine o'clock in the morning. This was attended to; and the pigeon returned to the Bull Inn, Bishopsgate-street, about half past eleven o'clock of the same morning; having travelled seventy-two miles in two hours and a half.

So great is the fecundity of this bird in its domestic state, that from a single pair, near fifteen thousand may be produced in the space of four years; a circumstance which, joined to the excellency of its flesh, shews its importance to man, and how well it repays his care and attention.

I am, most respectfully, dear Sir,

Yours, &c.

LETTER XLVII.

" ————— The thrush,
 And wood-lark, o'er the kind contending throng
 Superior heard, run thro' the sweetest length
 Of notes; when list'ning Philomela deigns
 To let them joy, and purposes in thought
 Elate, to make her night excel their day.
 The blackbird whistles from the thorny brake;
 The mellow bulfinch answers from the grove."

THOMSON.

DEAR SIR,

I NOW beg leave to call your attention to a class of the feathered creation of which the different species are innumerable, and distinguished with endless variety. Of these some appear formed to delight us with the beauty of their plumage, others with the melody of their notes, and all contribute to enliven the rural scene and exhilarate the mind.

Amidst so unbounded a variety of objects, all pleasing, all interesting, the mind might expatiate with ceaseless activity, unwearied in the contemplation of the works of Him at whose almighty fiat, Creation, with all its various forms, burst into existence.

In order, however, my dear Sir, to direct your attention to some fixed points in the boundless immensity of the prospect before you, I will endeavour to make a selection of some of the most striking objects, and entertain you with a description of a few of the most famed of these winged inhabitants of the woods, the groves, and the fields, which enliven the face of nature.

THE THRUSH

is extensively diffused, and admits of not less than 130 different species; of which the most remarkable at least in this country, are the missel-thrush, the throstle, or song-thrush, the field-fare, the red-wing, and the black-bird.

The missel and the throstle differ chiefly in size. The former, indeed, is the largest of the genus; being



Euphonia. Sitta.



Goldfinch. Cyanus.



about eleven inches in length, and of the weight of nearly five ounces. The latter is considerably less, and the speckles on its breast are of smaller dimensions, and more intimately blended.

The thrush is of a dusky-brown on the body and wings, and the speckled plumage of its throat is a mixture of brown and yellow. It is one of the sweetest songsters of the groves, and its deep-toned notes are equally remarkable for their variety, long continuance, and melodious inflection. It pours its delightful strains from the top of some high tree; but descends to the lowly bush or the hawthorn hedge to construct its nest.

THE BLACK-BIRD

is universally known in this country for its deep-toned melody, and the variety of its sonorous inflections. This bird, indeed, when heard at a proper distance, excels, perhaps, any of the inhabitants of the groves, unless the nightingale be admitted as an exception. The black-bird may be taught to whistle any tune, and even to imitate the human voice.

THE BULFINCH,

although small, is a beautiful object. In the male the head, wings, and tail are principally black: the throat and breast, a deep crimson. The colours of the female are much fainter, and she is considerably inferior in beauty. This bird is common in most parts of the European continent, but is somewhat scarce in this island. In the countries where it abounds, it frequents orchards and gardens for the sake of the insects which feed upon the foliage of trees and plants, and thereby renders an essential service to the proprietors.

The bulfinch is not remarkable for the agreeableness or the variety of its natural notes, but when tamed is wonderfully docile, and possesses so eminent a talent for imitation, that it may be taught to whistle any tune with the greatest exactness.

"I know a curious person," says the author of the *Edonologie*, "who having whistled some airs quite plain to a bulfinch, was surprised to hear the bird

add such grateful tones, that the master could scarcely recognize his own music; and acknowledge that the scholar excelled him.

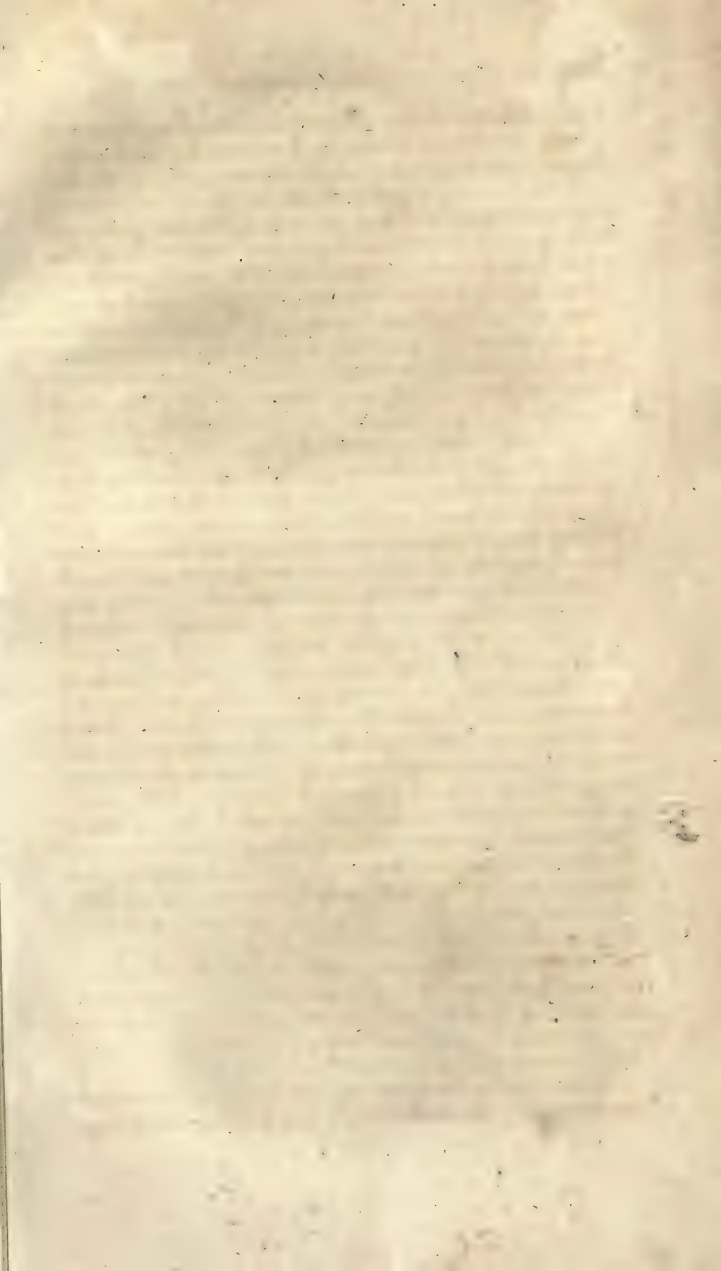
THE ORTOLAN

is a bird which has acquired an extraordinary degree of celebrity, from the delicacy of its flesh. The plumage, on the upper part, is of a chesnut colour, mixed with black; the under parts are of a dusky white. These birds are common in France and Italy, and are found in most countries of Europe, except Great Britain. In their migrations from one country to another, numbers are caught, and fattened for the table. When thoroughly fed it weighs sometimes three ounces, and is accounted the most delicious morsel which the culinary art can prepare; but it would not perhaps be equally agreeable to every one's taste, as it is little else than an entire lump of fat.

The birds commonly distinguished by the appellation of the finch kind, are divided into above a hundred well known species, and undoubtedly there are many others unknown to our ornithologists. Of these the goldfinch is one of the most beautiful, the most docile, and the most harmonious. This charming little songster is too well known to require any description. This species is widely diffused, for we find it an inhabitant of almost every quarter of the old continent, although it abounds principally in Europe.

The finch genus comprehends a great variety of foreign birds, some of which are remarkable for the beauty of their plumage, and others for their harmony. Among these the canary bird is universally known and esteemed. Its name indicates its origin, which is from the Canary islands, although we have them now from Germany, where they are bred up tame in great numbers, and sold into different parts of Europe. In a wild state it cannot bear the severity of our climate; but kept in a cage it will live ten or fifteen years.

In its native islands, which are rendered delightful by the beauty of their landscapes, and the harmony





Amphispiza bilineata.



of their groves, the canary bird is of a dusky grey colour, and so different from those seen in Europe, that some have doubted whether it be of the same species. So conspicuous are the effects of domestication and change of climate, in this bird, as well as in many other animals, both quadrupeds and volatiles. The canary bird in its tame as well as in its natural state, is highly valued for the harmony of its song and the great variety of its long and piercing notes. Being unwilling to weary you with the length of my letter, although the subject be extremely agreeable, I will leave you for a few moments to muse amidst the feathered songsters, and conclude by subscribing myself, most affectionately,

Dear Sir,
Yours, &c.

LETTER XLVIII.

“—————Up springs the lark,
“Shrill voic'd and loud, the messenger of morn.”

DEAR SIR,

I BEG leave at present to recommend to your notice a bird which contributes in an eminent degree to enliven the rural scenery of our island, for instead of retiring to the recesses of the forest, or the solitary retreats of sequestered groves, it hovers over the meadows and the fields; and accompanies the ploughman and the reaper; and, by its melodious strains, gladdens the heart of the peasant, and sweetens his toil.

THE LARK

is in this, and most countries of Europe, universally known, and, being considered as the harbinger of spring, and the herald of the morn, it may be said to lead the general chorus among “the tuneful nations.” With the singing of the lark so many delectable ideas are indeed associated, that of all the winged songsters,

no one contributes more to the pleasure of the human species.

The lark genus includes twenty-eight different species. Of these the sky-lark, and next to that the wood-lark, are the most common in this country; but the tit-lark and the field-lark are also British birds. All the lark genus is musical; but to enjoy their music in perfection we must leave them in possession of their native liberty. The song of any bird in captivity produces unpleasant sensations in a feeling heart. It is the landscape, the grove, the golden-eyed morn, the fluttering from branch to branch, the soaring in the air, the answering of the young, that gives true relish to the enrapturing strain. These united improve each other, and exhilarate the mind that is endowed with sensibility and refinement. The whole scenery of nature scarcely afford any thing more pleasing than to see the lark warbling on the wing, and hear it raising its notes as it soars aloft, and by degrees becomes invisible: it seems, indeed, to excite in the mind an idea of something celestial, when the most melodious strains continue to charm the ear while the musician is lost in the immense heights above.

The sky-lark and the wood-lark are larger than the sparrow, but not so large as the thrush. They have nothing particularly ornamental in their plumage, the colour of which is a sort of unvarying dappled grey. Their delightful music, however, entitles them to the second, if not to the first, rank among the feathered choristers. Two species of larks are remarked as the only birds that chaunt while on the wing.

THE NIGHTINGALE

is the most famous of all the songsters of the groves, and has so long been celebrated for the charms of its music, that the idea of harmony seems to be associated with its name. This charming bird was so admired by the ancients, that every allusion to it was considered as an embellishment to poetical description. The melody of the nightingale cannot be better de-

scribed than in the words of the ingenious author of *L'Histoire des Oiseaux*.-----“The leader of the verbal chorus begins with a low and timid voice, and prepares the hymn to nature, by essaying his powers and attuning his organs; by degrees the sound opens and swells, it bursts with loud and vivid flashes, it flows with volubility, it faints and murmurs, it shakes with rapid and violent articulations; the soft breathings of love and joy are poured from his inmost soul and every heart beats unison and melts with delicious languor. But this continued richness might satiate the ear. The strains are at times relieved by pauses, which bestow dignity and elevation. The mild silence of evening heightens the general effect; and not a rival interrupts the solemn scene.”

Nothing can be added to this animated description of the nightingale's song. It is, however, my dear Sir, much to be lamented that the delightfulness or the fame of its music has too often been an inducement to abridge the musician of its liberty, in order to secure the enjoyment of its harmony. The organs of this, as well as of all other songsters of the forests and the fields are

“—————Too delicately formed
To brook the harsh confinement of the cage.”

Perhaps it is a fortunate circumstance for Philomel that its external beauty does not correspond with the sweetness of its music, and that it charms the most when unseen. Possessing in so eminent a degree the powers of melody, it has no need of the brilliant plumage of the pheasant, the bird of Paradise, or the humming bird, to render it more captivating; and perhaps such additional attraction would subject it still more to the tyranny of man.

Its head and back are of a pale tawny colour dashed with olive; the throat, breast, and upper part of the belly are of a light glossy ash colour, and the lower part of the belly is almost white. The outside webs of the quills are of a reddish brown; the tail is of a deep tawny red, and the eyes are remarkably large and animated.

This most famous of the feathered tribe visits England in the beginning of April, and leaves it in the beginning of August. It is found in some of the southern parts of this island, but is totally unknown in Scotland, Ireland, and North Wales. It frequents thick hedges and low coppices, and generally lurks in the middle of the bush, so that it is rarely seen. The nightingale begins its song in the evening, and often continues it during the whole night. Its attachment to a particular place is remarkable. During several weeks together it will, if undisturbed, perch on the same tree, and from thence every evening pour its fascinating melody.

THE RED-BREAST

is a little bird which is celebrated for its affection to mankind rather than for its song. This bird, however, has the sweetest note of any in our climate, and makes every hedge vocal. The notes of other birds are louder and their inflections more sonorous; but the red-breast's voice is soft, tender, and melodious. The confidence which this little bird appears to place in man, together with its inoffensive disposition, claims and obtains his pity and protection. Such indeed is the universal prejudice in its favor, from whatever cause it may originate, that scarcely any one will offer it an injury: happy and beneficial prejudice, that excites benevolence and prevents the abuse of any of God's creatures!

THE SWALLOW

with its varieties is too well known to require any description. I shall therefore finish this survey of so beautiful and so curious a department of nature by the exhibition of one more of these creatures, which are singular and striking objects in a view of the animal creation, and have always attracted the curiosity of those who delight to contemplate the God of Nature in his works.

THE HUMMING BIRD,

from its diminutive size, and the resplendency of its colours, is not less an object of curiosity than the mock-bird, from the endless variety of its notes. This

beautiful little creature admits of six or seven varieties, distinguished by successive gradations, from the size of the wren to that of the humble-bee. It is, however, furnished with a bill, with wings, and all the other ordinary appendages of the larger species.

The smallest of this species is not larger than a hazel nut. Its wings and tail are black; but the feathers under the wings are of a greenish brown, with a fine red cast, and bear a gloss which no silk or velvet can equal. On its head it has a small golden crest, which sparkles in the sun with all the brilliancy of a star: the bill is straight and slender, and about the length of a small sized pin. The large humming bird is not half so big as our wren. It is not adorned with a gilded crest; but from the throat half way down the belly its crimson-coloured feathers are beautiful beyond conception, and vary according to the reflections of the light. The head of the humming bird is exceedingly small, and its round eyes are as black as ebony.

Imagination can scarcely conceive how much the numerous tribes of this diminutive species enliven and embellish a transatlantic landscape. As soon as the sun appears above the horizon, humming birds of different kinds and various sizes are seen, fluttering incessantly about the flowers which the country produces in abundance. The rapid motion of their wings renders it impossible to distinguish their colours, which seem blended in one general effulgence, and produce a kind of humming sound, from which their name is derived. Their sole food appears to be the honey which they extract from the flowers; and for the purpose of procuring this kind of aliment, Nature has provided them with forked tongues, completely formed for entering the cups, and drawing forth the nectareous juices.

The nests of these birds are, like themselves, a natural curiosity. They are curiously suspended from the very point of a twig, and are thus secure from the assaults of the monkey or the snake. They are formed of the fine fibres of vegetables carefully com-

bined with cotton and moss, and in shape and size resemble half a hen's egg. The eggs of the humming bird are of a clear white, with a few yellow specks, and of the size of a small pea. The male and the female alternately perform the office of incubation. The young when first hatched are entirely naked, but in a few days a fine down appears, which is gradually converted into that beautiful clothing which renders this bird an object of admiration.

The humming bird was formerly in high esteem among the Indians, for the ornament which its plumage added to their dress. The mode of taking these birds is chiefly by bird-lime daubed in the places where they haunt; and they are now caught chiefly for the purpose of selling them to Europeans as curiosities.

Having now, my dear Sir, exhibited to your view a selection of the most curious objects that are found among this smaller race of volatiles, of which the distinctions are too numerous for the examination of the most accurate and indefatigable ornithologist. I am certain that in contemplating the musical powers of the nightingale, the lark, and the thrush, and the beautiful plumage of the goldfinch, the bulfinch, and the humming bird, besides the wonders displayed in an endless variety of others; you will feel your mind deeply impressed with a sense of the diversifying energy of nature, communicated to it by its Divine Author. Permit me therefore to conclude, by expressing the esteem with which

I am, dear Sir,

Your's, &c.

LETTER XLIX.

" ——— So steers the prudent crane
Her annual voyage, borne on winds."

" ——— scarce
The bittern knows his time, with bill ingulph'd
To shake the sounding marsh."

THOMSON.

DEAR SIR,

I AM now about to entertain you with a glance of a species of birds different from the preceding, both in formation and habits, which are destined by the Author of Nature to a different mode of living, and furnished with such qualifications as are suitable to their wants and propensities.

WATER FOWL

may, with propriety, be divided into two different classes. The cloven-footed, and those which are web-footed. The first of these are denominated the crane kind. These, like the rest of the animals which nature produces with endless diversity, admit of too many distinctions to be brought forward with enumerative exactness. I shall therefore select a few out of the immense variety presented to our view.

THE CRANE KIND

being destined to live and procure their food among waters, but not to swim, Creative Wisdom is here, as every where else, displayed in their peculiar formation. The legs are of an extraordinary length, by which they are enabled to wade to a considerable depth. The bill is also calculated with the same adaptation to its particular use, being in general much longer than that of other birds, a circumstance that enables them to fetch up their food from the bottom of muddy quagmires and shallow waters.

THE COMMON CRANE

is a tall slender bird; its body is about the size of the hen turkey, usually weighing about ten pounds, measuring about three feet and a quarter in length, and

three feet in height, with a neck proportioned to the length of its legs. Its head is covered with a black bristly crest; and the back part, which is without feathers, and appears of a red colour, distinguishes it from the stork, to which it bears, in other respects, a considerable resemblance. The general colour of its plumage is ash-coloured; and from the pinion of each wing grow two large tufts of feathers, which the bird can at pleasure erect and depress, and which, in ancient times, were often set in gold, and worn as ornaments on the heads of persons of distinction.

The arctic regions are the favorite abode of these birds; for although they are found in every country of Europe except Great Britain, they may be considered as visitants rather than inhabitants, as they migrate from one part to another, and seem to follow the seasons. They still continue to be held in a kind of veneration by the vulgar of every country, and the ancient prejudices appear to operate fortunately in their favour.

Of this bird there are several varieties, of which the principal seems to be the Numidian crane, remarkable for the singularity of its habits and gestures. By the French it is called the damoiselle, from the supposed elegance and gracefulness of its motions. Sometimes it stoops, then rises, lifts up first one wing and then the other, sails forward and returns, and incessantly exhibits a variety of gesticulations. This is a very scarce bird. Its plumage is mostly of a leaden grey colour; but from the back of the head spring beautiful white feathers, which bend downwards, and are about four inches in length; while the fore part of the neck is adorned with black feathers, composed of very fine filaments, which fall down on the breast, and give an air of elegance to its appearance.

THE HERON

is remarkable for the two opposite qualities which are blended in its character, excessive timidity, and extreme rapacity. This bird is remarkably light in proportion to its size, seldom weighing more than three pounds and a half, although it expands a breadth of



Crane



Heron



wing of not less than five feet: and although other animals mostly grow fat by a plentiful supply of food, this continues constantly lean, notwithstanding its insatiate voracity. Its bill is not less than five inches long from the base to the point; and its claws are long, sharp, and formidable: but although it appears thus completely armed not only for defensive, but offensive war, it flies at the approach of the sparrow hawk. Of all birds, however, this commits the greatest depredations in fresh water; and there is scarcely a fish, however large soever it may be, that it will not strike at and wound, although it be unable to carry it away; but it subsists chiefly on the smaller fry. The heron wades into the water as far as it can, and then carefully watches for its victims, and will, it is said, destroy more fish in a week than an otter will do in three months.

"I have seen," says Willoughby, "an heron shot that had seventeen carps in his belly, all which he is able to digest in six or seven hours. I have also seen," continues the same author, "a carp of nine inches and a half long, taken out of the belly of a heron." Several gentlemen who kept tame herons to try what quantity one of them could eat in a day, have put small roach and dace into a tub, and they have found one heron eat fifty in a day, one day with another. In this manner a single heron will destroy fifteen thousand carp in a single half year.

After this relation, we are not to wonder that the heron is considered as so terrible a depredator in fish-ponds. It is now generally destroyed as a nuisance, although it was once killed for its flesh, which was formerly considered as a delicacy, and is indeed very good food, although not at present held in any great estimation.

If we might be permitted to judge of the inscrutable designs of the Creator in forming this insatiable bird, existence seems to be given it for the purpose of counterbalancing by its voracity the superabundant fecundity of some species of fishes, and preventing their excessive multiplication.

The heron is said to be a very long-lived bird. Mr. Keyster asserts, that it lives to the age of sixty years; and a recent instance which occurred in Holland, confirms this account of its longevity. A heron was found in that country which had a silver plate fastened to its leg, with an inscription, importing that it had been struck by the Elector of Cologne's hawk thirty-five years before.

THE BITTERN

is a bird of the heron kind, distinguished by the dismal hollow sound which it emits, and which resembles the interrupted bellowings of a bull, but is much louder, and heard at a greater distance.

The bittern is of a pale yellow colour, spotted and barred with black. It lays seven or eight eggs of an ash-green colour, and in three days after hatching leads its young ones out to their food. The flesh of this bird is esteemed a great dainty.

THE STORK

bears so great a resemblance to the crane, that it is no wonder that one should often be mistaken for the other. Their conformation, indeed, appears to be exactly the same, the difference consists in the colour, disposition and habits. The colours of the crane are cinereous and black, those of the stork white and brown. The voice of the former is loud and piercing, while the latter is always silent. The former prefers grain to every other aliment, the latter lives wholly on frogs, serpents, small birds and fish. And while the crane delights to conceal itself far from the habitations of men, the stork generally fixes its residence near the most populous places.

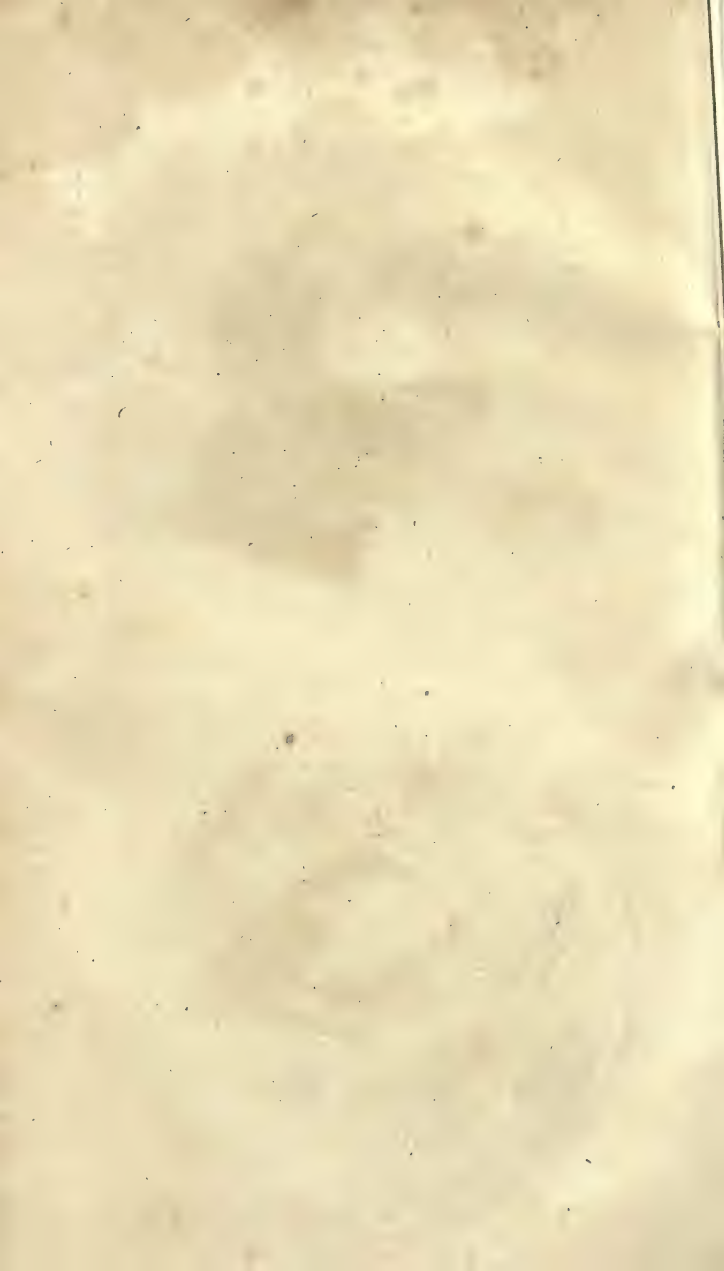
Storks, like cranes, are migratory, but, as they always travel by night, their flight is concealed. When they leave Europe they all assemble on a certain day, and not one of the party is ever left behind. They generally make their appearance in this part of the globe about the middle of March, and build their nests on the tops of chimnies, or of high towers, pinacles of lofty buildings, and sometimes on the tops of high trees. The stork lays from two to four eggs,



Stork.



Pelican.



resembling in colour and size those of a goose. The time of incubation is one month; and after the exclusion of the young, the parent bird is extremely solicitous for their safety, which, however, is seldom endangered, being universally protected by popular prejudice, which indeed is seldom so well founded as in relation to this bird; for as it destroys great numbers of noxious reptiles, it is almost every where held in esteem.

There are few towns on the continent, at least where the situation is low and marshy, that have not the stork as an inmate, and every where it is a favorite of the people. There is certainly something amiable in prejudices which inspire the breast with sentiments of humanity.

I shall now proceed to the second class, into which I have, according to general custom, divided the prodigious variety of aquatic birds which frequent the shores of the ocean, and those of rivers and lakes, or enliven the dreary solitude of bogs and morasses.

With every wish for your health and happiness,

I am, dear Sir,

Your's, &c.

LETTER L.

"From man retir'd, amid the lonely marsh,
Flamingoes build and tend their curious nests."

DEAR SIR,

I SHALL now select for your entertainment and instruction, the most remarkable of those water fowl, which are commonly denominated the goose kind, and of which the distinguishing characteristic is a membranous web, connecting the toes, which greatly facilitates their swimming. Here we cannot but observe the curious adaptation of their mechanism to the mode of life for which they are designed. Their toes, thus joined, serve them as oars; and their legs, being short, are not less judiciously constructed for

striking with facility in the water, and assisting their progress in that element for which they would be wholly unfit, were they as long as those of most of the kind last described. It is impossible, my dear Sir, to examine the conformation of these two kinds of aquatic fowl, of which one is destined to wade, and the other to swim, without discovering unequivocal proofs of an all-wise design: the same may be observed of their plumage, which is peculiarly warm, thick set, and unguineous, and every way calculated to resist the attrition of the water, and prevent its penetration to their skins.

Before we proceed in our survey of this numerous and useful class, it may not, my dear Sir, be amiss to remind you, that there are two or three species, among which may be reckoned the coot, and the water-hen, birds, too well known to need a particular description, and which have neither the long legs of the crane kind, nor the web-foot of the duck kind; but are distinguished by their pinnated or finned feet, which are furnished with jagged membranes, in order to assist them in swimming, although not so perfectly adapted to that purpose as the web-foot of the goose or the duck. These appear to be an intermediate race between the long-legged and the web-footed classes.

Nature, my dear Sir, in the immense variety of her works, proceeds by regular gradations, thereby producing that infinite diversity of forms and colours which variegate her scenery, and excite our admiration.

THE FLAMINGO

is one of the most remarkable of all water fowl: it is one of the tallest and most beautiful. Its body, which is about the size of that of the swan, is covered with a plumage of the most brilliant scarlet colour. Its legs and neck are of so extraordinary a length, that when it stands erect, it is between six and seven feet high. Its wings, when expanded, reach about five feet and a half: the bill, which is formed like a bow, is partly red, and partly black, and not less than seven inches in length. The legs and thighs, which

are not much thicker than a man's finger, are about two feet and three quarters long, and its neck more than three feet, and the toes are united with a web like those of a goose.

This extraordinary fowl, although once well known in Europe, is now found only on the African and American coasts. Its beauty, its size, and the peculiar delicacy of its flesh and tongue, have been such temptations to its destruction or capture, that it has long since deserted the shores frequented by men, and taken refuge in those that yet are but thinly peopled.

The tongue of this bird was once thought the greatest of delicacies. The Romans considered it as the most elegant dish; and history informs us, that one of their emperors had fifteen hundred of them served up at one of his feasts.

The flamingo builds its nest in extensive marshes, where there is no danger of surprise; and the fabric is as great a curiosity as the architect. It is raised about a foot and a half above the surface of the pool, and is formed of mud which is hardened in the sun. It resembles the frustrum of a cone, or one of those pots which are commonly placed upon chimnies. On the top it is hollowed out to the shape of the bird, and in that cavity the female deposits her eggs, which never exceeds two in number. The young ones are a long time before they can fly; but they run with amazing speed. When taken young, they are tractable and easily tamed.

THE PELICAN OF AFRICA

is a bird which merits, and has indeed in all ages attracted the attention of the naturalist. It is frequently mentioned in the allusions of eastern writers, and often introduced in the sacred writings, as the emblem of solitude, of silence and sorrow. In colour and shape it resembles the swan, but far exceeds it in size. The singularity which peculiarly distinguishes this bird, consists in the great pouch under its bill, which merits a particular description, especially as it has given rise to a variety of fables.

The enormous bill of the pelican is fifteen inches long, from the point to the opening of the mouth, which is a good way behind the eyes; its base is greenish, but it varies towards the end, which is of a reddish blue. At the lower edge of the under chap hangs the pouch, or bag, which is capable of containing fifteen quarts of water, and reaches the whole length of the bill as far as the neck. The bird has the power of wrinkling up this bag into the hollow of the under jaw: it is not covered with feathers, but with a very smooth and soft down, and when empty, is scarcely perceptible; and Tertre assures us, that when filled, it is capable of containing as much fish as would suffice sixty men to dinner. Such is the wonderful conformation of this extraordinary bird.

The pelican was once known all over Europe, although it now seems to have deserted our coasts. In the island of Manilla, the bird is of a rose colour; but in America, ash-coloured; and in Africa, white. They are all torpid and inactive. It is only from the impulse of hunger that they are excited to action, and without that irresistible stimulus, they would always continue in fixed repose.

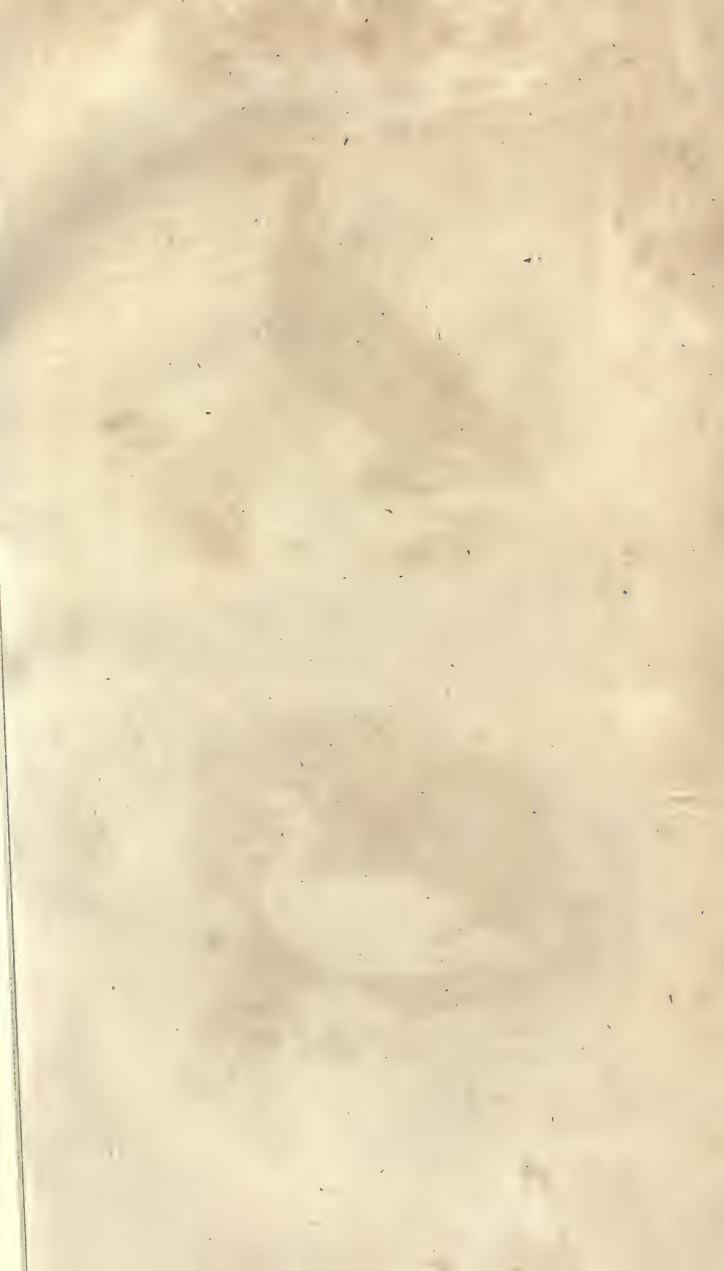
The pelican is a bird remarkable for its longevity: and Gesner tells us, that the Emperor Maximilian had a tame one which lived above eighty years, and always accompanied his army on its march.

THE FRIGATE PELICAN

is chiefly met with between the tropics: it is about the size of a large fowl. It is often found above a hundred, or sometimes two hundred leagues from land; and sometimes settles on the masts of ships. Its extraordinary expansion of wing, which is not less than fourteen feet, enables it to take those immense flights. When it is unsuccessful in fishing, it attacks the gulls, and other water fowl, and by compelling them to disgorge the fish they have taken, indemnifies itself for its own ill success.

THE CORMORANT

is another species of the pelican, about the size of a Muscovy duck. It is chiefly remarkable for its inde-





Phalacrocorax urinator.



Grus grus.

fatigable nature, and its dexterity in catching fish, for which purpose it is in some countries, and particularly in many parts of China, brought up tame, and regularly employed. "It is very pleasant," says a judicious writer, "to behold with what sagacity they portion out the lake or the canal where they are on duty. When they have found their prey, they seize it by the middle with their beak, and carry it without fail to their master. When the fish is too large, they give each other mutual assistance: one seizes it by the head, and another by the tail, and in this manner they carry it together to the boat. They have always, while they fish, a string fastened round their throats, to hinder them from devouring their prey. There are some other species of the pelican, which, for brevity's sake, I shall omit: those described being the most remarkable.

THE SOLAND GOOSE

is about the size of a tame goose, but its wings are much longer, their expansion being not less than six feet. Its colour is chiefly white, and it has a pouch resembling that of the pelican, and of a size sufficient to contain five or six herrings, which, in the breeding season, it carries at once to its mate, or its young.

These birds, subsisting entirely on fish, always resort to those unfrequented shores or unknown islands, where they can find abundance of food without being disturbed by the intrusion of man. The islands on the coasts of Scotland, Ireland, and Norway, appear to be the great rendezvous of these birds. On the Bass island, in the Frith of Edinburgh, they swarm in such abundance, that, according to a modern author, "it is scarcely possible to walk without treading on them: the flocks on the wing are so numerous, as to darken the air like a cloud; and their noise is such, that one cannot without difficulty be heard by the person who is next to him." And we find, by the accounts of navigators, that they are scarcely less numerous in many other parts of the world.

The soland goose is migratory, but does not remove to countries far remote; and its migration appears to

be determined by the course of the annual shoals of herrings, rather than by any circumstances of climate. It lays but one egg; and its young is reckoned a great delicacy, and sold at a high price.

THE ALBATROSS

is an inhabitant of the tropical climates, and also beyond as far as the Straits of Magellan, and even to Cape Horn, where it abounds, as well as about the Cape of Good Hope. Its body is larger than that of the swan, and its wings have ten feet of expansion. The bill, which is six inches long, is yellow, and terminates in a crooked point: the top of the head is of a bright brown, but the back is much darker; and under the belly and wings it is perfectly white.

This bird, which is reckoned the first and the principal of the gull kind, not only eats fish, but also devours such small water fowl as it can take by surprise. Like all of the same kind, it preys on the wing, and frequently pursues the flying fish which has been forced out of the sea by the dolphin. If we except the frigate pelican, there is perhaps no other bird that is capable of supporting itself for such a length of time on the wing as the albatross. Except during the season of incubation, it seldom approaches the land, but continues night and day hovering in the air in search of its prey, stimulated by hunger, and apparently insensible of fatigue.

This feathered tyrant of the deep, which is not only one of the largest of the African and American birds, but also one of the most formidable of all those that prey upon the waters, seems to have a peculiar affection for the penguin, and a pleasure in its society. They always chuse the same situation for their nests, which is in some distant and uninhabited island. In those places their nests are built in close vicinity, as if it were for mutual assistance and protection; and their friendship does not appear to be ever interrupted. The albatross admits of several varieties, all of them of a less size than the species here described, but they have in general the same propensities, and inhabit the same climates.

When you read the relations of voyagers who have visited the tropical seas, and those which extend to still more southern latitudes, you will no doubt observe that scene of continued warfare among birds and fishes, alternately pursuing and pursued, which, as well as among animals on the land, every where presents itself; and in order to reconcile this system of incessant hostility which appears to agitate, and at the same time to animate the world of life, I shall refer you to the observations made on this subject in a preceding letter. When the circumstances are fully investigated, I am persuaded that you will perceive the whole system of animal warfare, and their contribution to each other's support, to be perfectly consistent with the wisdom and goodness of the Author of Nature, whose counsels are far beyond the reach of superficial enquiry.

That the length of my letter may not seem tedious, I will for the present conclude, with subscribing myself,

Dear Sir,

Your's, &c.

LETTER LI.

"There o'er his head the cliffs tremendous frown,
The cordage cracks, the stones come rattling down,
While far and wide old Ocean rolls beneath!"

DEAR SIR,

AS I concluded my last with a description of the albatross of the southern parts of the world, which is the first of the gull kind, I cannot proceed in a more regular and uniform manner than in giving you at least a transient glance at that numerous race which is divided into about twenty species.

THE GULL, THE PETREL, AND THE TERN,
are so well known, at least to all who live within any reasonable distance of the coast, that I shall spare you a particular description, which among so great a va-

riety of species would indeed be tiresome. They have most of them a fishy taste, and their flesh is coarse and unpalatable. The poor inhabitants of our northern islands, however, esteem it a banquet, and indeed it may well be thought excellent by those who seldom taste any better. The gull, the petrel, the tern, and indeed most birds of this genus have nearly the same nature and habits, frequent the same place, and are caught in the same manner, and by risking the same dangers.

In order, my dear Sir, to add to the multitude of examples of the connection of animal life with human economy, which the history of nature on every side presents to our view; and to impress on your mind an idea of a most dangerous and adventurous scene with which you are unacquainted, and of which, without an exact account you could not form any conception, I shall amuse you, a few moments with a description of the sport of catching sea-fowl and taking their eggs on the stupendous rocks which in some places are found on the northern coasts of this island and appear as a bulwark to oppose the assaults of the ocean. To these shores the gull, the petrel, and innumerable other sea-fowl resort, and breed in the cavities of these rocky cliffs. Of the tremendous sublimity of those immense elevations it is not easy to form an idea. The stupendous works of art, the highest towers, the noblest domes, are mere ant-hills when put in the scale of comparison, and a single cavity in one of those rocks often exhibits a canopy more lofty than the ceiling of a Gothic cathedral. What would you think, my dear Sir, were you placed on the rock of St. Kilda, elevated above three quarters of a mile, or more than fourteen times the height of St. Paul's cathedral above the surface of the sea, and overhanging it in a most terrific manner? With what awe would you approach that impending height and look down on the immense abyss below? The waves that swell like mountains in an ocean three thousand miles wide are scarcely seen to curl on the surface, and their tremendous roar can scarcely be heard from that

stupendous elevation. Nothing, my dear Sir, could be better calculated than such a view to excite the most sublime ideas of the magnificence of nature and of the awful grandeur and majesty of nature's God.

In those seemingly inaccessible mansions within the sides of these rocks, fortified by dreadful precipices above and below, myriads of sea-fowl are seen sporting and flitting from fragment to fragment. To the spectator from above those that are larger than the eagle appear less than the swallow. Here they might seem in perfect security from the arts and activity of man; but want, the impulse of which is irresistible, obliges the peasant to encounter the most formidable dangers, and excites him to exertions almost beyond the force of human resolution. When the precipice is to be assailed from below, the fowlers provide poles of five or six ells in length, with a hook at the end; and fixing one of these in the girdle of the person who is to ascend, his companions, in a boat or on a projection of the cliff, assist him until he has procured a firm footing: when this is accomplished, he draws up the others with a rope, and another man is again forwarded by means of the pole to a higher station. Frequently the person in the highest situation holds another suspended by a rope, and directs his course to the place where the birds have placed their nests. It unfortunately too often happens that the person who holds the rope has not a footing sufficiently secure, and in that case both of them inevitably perish.

Many precipices, however, are so abrupt as not to be accessible from below. In this case a rope of eighty or a hundred fathoms long is provided, which one of the fowlers fastens round his waist and between his legs in such a manner as to support him in a sitting posture. The rope is held by five or six persons at the top, and it slides upon a piece of wood laid so as to project beyond the precipice. By means of this apparatus the man is gradually let down until he can attack with success the habitations of the feathered tribes. This operation, however, is not without its

attendant dangers. The descent and friction of the rope often causes the loose stones to tumble down on every side. To defend himself against them the fowler covers his head with a kind of helmet or some other safeguard; but many are notwithstanding killed by this kind of accident. Those who are unskilled in or unaccustomed to this business are very often seized with a giddiness on seeing themselves suspended from these tremendous heights; but the skilful practitioner swings himself about with amazing dexterity, directs his attack to that part of the rock which seems to promise the greatest success, strikes with his fowling-staff the game as it comes out of the holes, occasionally disengages himself from the rope by which he was suspended, roams through the cavities of the rocks, and, when he has procured a sufficient booty, gives the signal to his companions, and is again drawn up; when a good supper of the coarse flesh of the sea-gull compensates to these poor and hardy adventurers the dangers and fatigues of the day.

I have given you, my dear sir, this account of the manner of taking these birds in the northern and western islands, as an interesting exhibition of a grand and awful scene. I have in some of my preceding letters given you an account of the hunting of the elephant and the lion, the chamois, the wild boar, and many other animals of which the chase requires dexterity, and is attended with danger: the manner of taking sea-fowl here described, however, is beyond comparison more dangerous, and demands far greater resolution and activity. Although the exertions of men in a state of poverty and obscurity pass unnoticed, these fowling enterprises of the northern peasants would perhaps have tried the resolution of some of the heroes of history.

We have now, my dear Sir, taken a cursory view of a numerous class of aquatic birds, and in this slight glance you cannot but have observed the exact conformity between their construction and their destination, which every where strikes the eye, and proclaims the wisdom of Him who has so admirably en-

dowed every being with corresponding instincts and powers, indicated to them their proper food, and assigned them the place of their abode. I purpose in my next to offer to your contemplation another class, which, in its turn, cannot fail of exciting appropriate and interesting reflections, and for the present beg leave to assure you that, with every wish for your welfare, and with every sentiment of unfeigned affection,

I am, dear Sir,

Yours, &c.

LETTER LII.

————— “The stately swan
Gives out his snowy plamage to the gale;
And, arching proud his neck, with oary feet
Bends forward fierce, and guards his ozier isle,
Protective of his young.”

THOMSON.

DEAR SIR,

THE class of volatiles to which I am now about to call your attention is of the most interesting kind. Intimately connected with domestic economy, and producing a number of our conveniencies and comforts, this part of the feathered world affords a wide field for observation; of which, however, I shall at present content myself with giving you a glance; and suggesting at the same time to your mind a few leading reflections, which you will extend and multiply into a variety of pleasing combinations.

THE GOOSE KIND

constitutes an useful class of volatiles, some of which have from time immemorial been reclaimed from a state of nature, and seem pleased with their dependence on man, whose care for their support and protection they amply repay. At the head of this important class stand the swan, the goose, and the duck, of which the first is not less admirable for its elegance

than the two latter are estimable on account of their utility.

THE SWAN

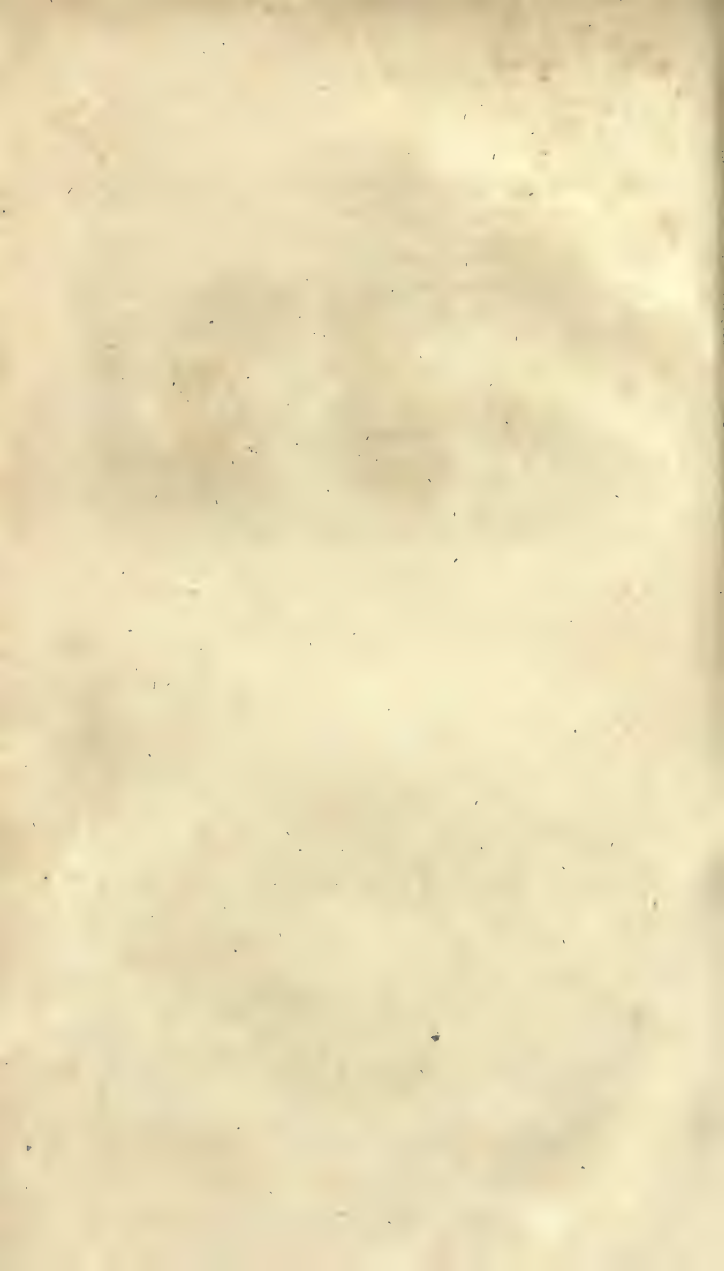
is the largest of British birds, and the most majestic and picturesque of all those that swim in the waters. When it exhibits itself smoothly sailing along the stream, displaying its graceful attitudes, and moving forward without the smallest effort, a more beautiful figure can scarcely be found within the range of animated nature. This elegant bird admits of two varieties, the wild and the tame swan; the former has a loud cry, which may be heard to a great distance; but the latter seldom emits any sound. The wild swan is less by about one-fourth than the tame kind, and also of a different colour, its back and the tips of its wings being ash-coloured; while the tame swan is remarkable for the delicate and uniform whiteness of its whole plumage. In Cumberland county, in New-Holland, black swans are very common, and three of the species are now exhibited (1806) at Exeter-Change, London.

The wild swan is a native of the arctic regions, and visits our more temperate climates only when compelled by the severity of the cold. During the summer season they frequent the lakes of Lapland in common with the numerous flocks of other aquatic fowl; there also it breeds and rears its young. Of the tame swan any minute description is unnecessary: to give some idea of its size it is sufficient to say that it grows to the weight of upwards of twenty pounds. Its majestic appearance has been already noticed; and it is not less remarkable for the delicacy of its appetite than the elegance of its form: its food consists of corn, with herbs and roots that grow in the water, or are found near the margin. It prepares its nest, in some retired part of the bank or in some islet in the stream, and lays seven or eight eggs, white, and much longer than those of the goose. It sits two months, and the young, when first excluded, are ash-coloured, and are some months before they



Bridge over the River.





acquire that delicate whiteness for which this magnificent bird is so much admired.

All the stages of this bird's approach to maturity are slow, and seem indicative of its longevity. It is two months in hatching: several months in acquiring its colour, and a whole year in growing to its full size. Willoughby seems to think the swan may live three hundred years, but although this appears very doubtful, if not absolutely incredible, it is universally allowed that it reaches the age of a hundred.

THE GOOSE

in its domestic state, is so universally known as to preclude the necessity of any description. It exhibits indeed a variety of colours, while the wild-goose, which is considerably less in size, always retains the same marks; the whole plumage of its upper parts being of a dark ash-colour, and the breast and belly of a dusky white.

The wild-goose is supposed to breed in the northern countries of Europe: in the beginning of the winter it descends into more temperate climates. Wild-geese are often seen flying, at a very great elevation, in flocks of from fifty to a hundred together, disposed in the most regular order, and generally forming either a direct line, or two lines joining in an angle. When they alight in the day time, which seldom happens, they range themselves in a line, like cranes, and seem to have descended rather for rest than for feeding; for the latter business is chiefly performed in the night. When they have sat in this manner reposing themselves for an hour or two, one of them sounds a kind of charge, to which the whole flock pay the strictest attention. Every goose is instantly on the wing: their ranks are immediately formed in the air, and they pursue their route with renewed alacrity. This well-known bird admits of several varieties, for besides the tame and the common wild-goose, there is the bean-goose, a bird of passage, which arrives in Lincolnshire in the autumn, and departs in the month of May. This bird resembles the wild-goose in colour, and weighs about six pounds.

THE DUCK,

like the goose, may be viewed in two grand divisions, the tame and the wild kind; and each admits of a number of varieties. The wild-duck, or mallard, differs in many respects from the tame, and exhibits a still greater variety of species. These I shall not, my dear Sir, trouble myself or you with describing, nor shall I even burden your memory with enumerating the varieties which different countries afford; for the multiplying of names will tend but little to increase the sphere of your knowledge. The duck in its domestic state is universally known, and the most obvious distinction between the wild-duck and the tame consists in the colour of their feet; those of the former being yellow, and those of the latter black.

They all live nearly in the same manner, and wild as well as tame all on the same kind of food. They prefer corn, grass, and other vegetables where they are plentiful; but their appetites are far from being delicate, and they will greedily devour frogs, toads, lizards, or any other kind of reptiles or insects that come in their way.

As ducks possess the faculties both of swimming and flying, they are well adapted for migration, and the wild are in general birds of passage; and it is not improbable that they perform their passage across the ocean alternately in the water and in the air. As soon as they arrive in this country they are seen flying in flocks, and appearing to take a survey of the lakes where they intend to make their winter's abode. In the choice of these they have two objects in view, freedom from disturbance, and the facility of procuring food.

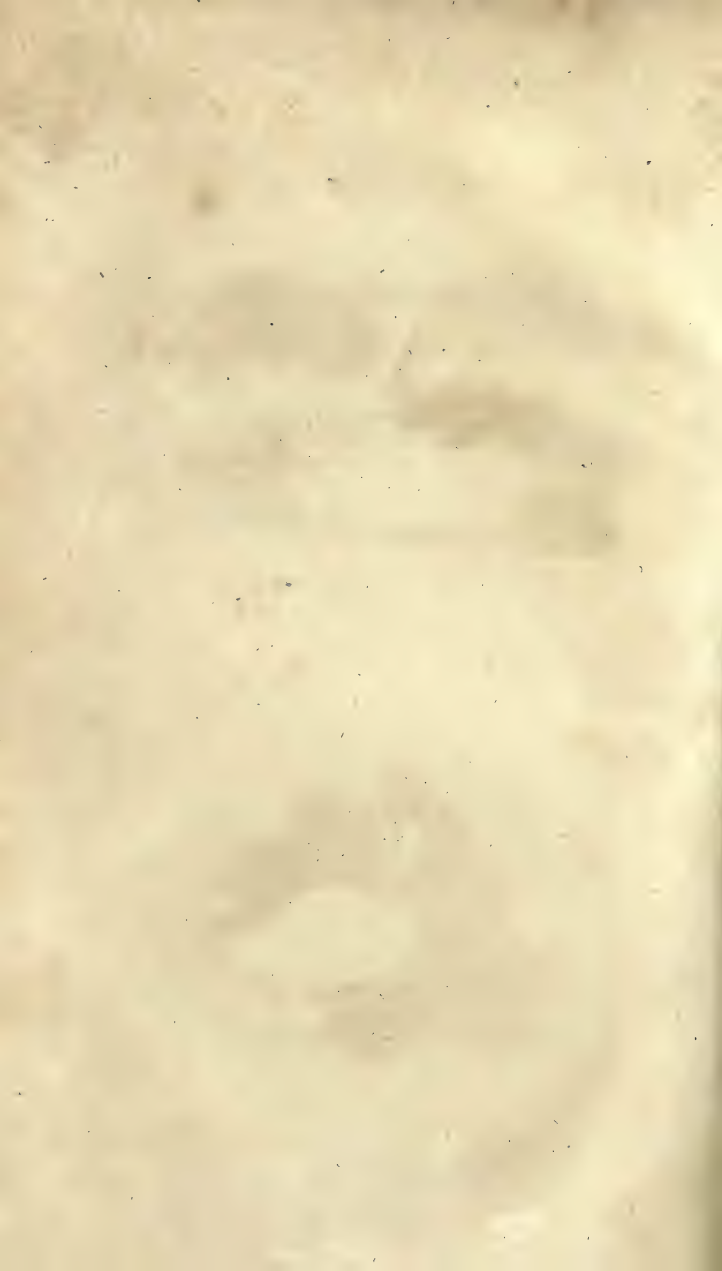
Various methods of taking these birds have been tried, but none used in this country has succeeded so well as the decoy, in places where the situation is favorable. This is principally where there is a pond nearly surrounded by a wood, and beyond that a marshy and uncultivated ground. When a proper place is chosen, the pool is planted round with wil-



Duck.



Goose.



lows, unless it be shaded on every side. On the north and on the south there ought to be three or four ditches, broad towards the pool, and growing gradually narrower till they end in a point. These ditches are covered over with nets, supported by curved sticks, fastened on each side, and terminated by a tunnel net. The whole apparatus must be carefully concealed by a hedge of rushes or reeds, running along the margin of the pool, behind which the fowler manages his operations, which would be totally frustrated if the ducks should discover him. The places being fitted in this manner, the fowler is provided with a number of wild ducks rendered tame, and trained to the business. These are always fed at the mouth of the pipe, and accustomed to come at a whistle. They are called decoy-ducks, and without them the business could not be transacted. As soon as the evening is set in the wild-fowl begin to feed; and the fowler, when he finds a fit opportunity, and sees the decoy covered with ducks, throws upon the water handfuls of hemp-seed, or any other seed that will float; and whistling to the decoy-ducks, easily allures them to their accustomed regale at the mouth of the pipe. These are readily followed by the wild-ducks, which are ignorant of the snare laid to trepan them, and push forward till they discover that the dimensions of the pipe continually decrease, and then they begin, too late, to suspect some concealed danger. Their retreat, however, is prevented by a person placed at the entrance. They are consequently compelled to push forward to the end of the funnel, where they are without any difficulty secured. When the wild-ducks are too drowsy and sluggish to pay attention to the enticements of the decoy-ducks, which sometimes happens to be the case, a little dog trained up for the purpose is made use of to drive them into the snare; but this method is not so certain nor so effectual as the former mode of proceeding. Of all the counties in England, Lincolnshire is one of the most famous for its decoys. They are let for considerable annual sums, and from them the London markets

are chiefly supplied with this delicate fowl. It is said that upwards of thirty thousand ducks, widgeon, and teal, have been sent up to the metropolis from the decoys in the vicinity of Wainfleet;---a circumstance that evidently proves the great importance of this valuable fowl, which furnishes our tables with so excellent an article of food, and shews how profusely heaven has provided for our support and comfortable subsistence.

To this manner of taking wild ducks in England I will, my dear Sir, for your entertainment, subjoin an account of another still more extraordinary, which is practised in China, and is so exceedingly curious that it deserves to be mentioned.

As soon as the fowler sees a number of ducks settled on a particular piece of shallow water, he sends among them a number of gourds, which resemble our pumpkins. These, having the insides scooped out, easily swim, and sometimes twenty or thirty of them are seen floating in one pool. The birds are at first fearful of approaching them; but by degrees their shyness wears off, they become familiarized to the sight, gather about them, and rub their bills against them in sportive playfulness. As soon as the fowler perceives them perfectly fearless of the gourds, he prepares to deceive them. He hollows out a gourd large enough to contain his head, makes holes in it, to see and breathe through, and then puts it on like a cap. Being thus accoutred, he wades slowly into the water, stooping and creeping where it is shallow, and always taking care that nothing but his head shall appear above the surface. In this manner moving unperceived towards the unsuspecting birds, he gets in among them, while they, having been already accustomed to the sight of the gourds, apprehend no danger when the enemy is in the very midst of them. He then begins his operations by seizing a duck by the legs, and instantly drawing it under the water before it has time to cry or give the alarm to the rest; he fastens it to his girdle, and approaching another serves it in the same manner, and thus,

proceeds until he has gotten a sufficient load. Having procured his quantity he slowly moves off again. All this the Chinese fowlers perform with such dexterity by keeping their bodies always concealed in the water, that they never alarm the flock, and the ducks, ignorant of what is transacting among them, neither suspect the unseen danger, nor notice the instantaneous disappearance of their companions. By the ingenuity of this method, and their dexterity in practising it, the Chinese obtain great quantities of the excellent food which the flesh of the duck is known to afford.

The duck, in a state of domestication, is extremely beneficial to mankind; and as it subsists on waste corn, worms, snails, and other insects, or reptiles, it is maintained with little expence. Tame ducks lay a great number of eggs every year, produce many young, and are easily and expeditiously fattened for the table.

Perhaps, my dear Sir, you have not reflected on a subject of more extraordinary importance than the history of these tribes of the feathered race which I have been presenting to your view. One of our principal luxuries, a luxury indeed, which may reasonably be reckoned a conveniency, and which refinement and habit has rendered an absolute necessary of life, is derived from the duck and the goose. The beds on which we so comfortably repose are filled with their feathers, and if these were wanting it would be difficult to find any thing that could be conveniently substituted in their place. The quill of the goose is also an article of inestimable value, to the use of which we are in a great measure indebted for those literary and scientific compositions, from which the mind derive improvement, and indeed, without this important instrument business would be carried on with great difficulty.

From these various considerations we cannot but rank the goose among those creatures which are most useful to mankind.

Having finished this sketch of the feathered tribes,

I am certain, my dear Sir, you will feel some regret losing sight of so charming a part of the creation. These beautiful inhabitants of the air, indeed, possess all those qualities that can amuse the fancy and exhilarate the mind, and many of them contribute to our benefit as much as to our pleasure. Some charm us with their melody, while others fascinate by their beauty. The variety of their notes, the elegance of their forms, and the brilliancy of their colours, all concur to exhibit a magnificent display of nature's plastic energy, and irresistibly draw us to the contemplation of Him who is the essential source of all beauty, splendor, and harmony.

I am, dear Sir,

Your's, &c.

LETTER LIII.

“ ————— Let us read
The living page, whose ev'ry character
Delights, and gives us wisdom.”

HURDIS.

DEAR SIR.

HAVING proceeded thus far in our survey of animated nature, permit me to bring forward some general observations relative to the evident display of an all-wise design which in every part of animal mechanism, shews itself so clearly, as not to admit of any doubt, and must indeed on the slightest reflection put atheism to the blush.

Some of these demonstrations of an all-wise intelligence manifested in his works, are so obvious, as to strike even the most superficial observer. If it suited our present purpose to enter into a minute survey of the human, or any animal body, this alone would answer all enquiries on the subject; but in conformity to the plan on which we are proceeding, I shall content myself with offering to your consideration a few

of the most striking correspondences of animal organization, with its destined purposes.

Every animal frame, considered as a mass, exhibits a number of properties which scepticism itself could scarcely forbear to acknowledge as indubitable evidences, not only of a regular plan, but of consummate accuracy in carrying it into execution.

In the first place, my dear Sir, consider the exact correspondency of the two sides of each animal. You see the right side answering to the left, eye to eye, leg to leg, wing to wing, one side of the face to the other, with a precision which human art finds exceedingly difficult to imitate. The exact resemblance of the two eyes of each individual, considering the curious and compound structure of this organ, with the various and delicate shades of colour, with which the iris is tinged, is a circumstance in the construction of animal bodies, which can never be too much admired, and which is rendered still more wonderful by the difference observable, not only in the different species, but also between particulars of the same species: of ten thousand eyes, it is questionable whether one could be matched except by that which is placed on the opposite side of the same head, or whether it would be possible to dispose them in suitable pairs by any other collection or arrangement than that which actually prevails.

The general disposition of the external and internal parts, which constitute the animal frame, is a proof of its being the work of an infinitely wise Being. You know, my dear Sir, that the internal parts are tender, soft, intricate, and pliable, so that their constant action which is necessary to life, may not, by any obstruction or rigidity, be impeded. All the internal operations are going on with regularity, while the body itself, the external case, which holds together the whole complex machinery, is tossed and jolted about in every manner, and with every degree of agitation. Observe this, my dear Sir, and then consider how well every part must be secured, how carefully surrounded with safeguards, how well pack-

ed together, that notwithstanding the frequent and often sudden and violent agitations and contortions of the body, the interior machanism remains uninjured, and even its nicer motions unimpeded.

If your leisure permitted you to investigate, and your age enabled you to comprehend the intricacies of anatomical science, I should point out to you all the curious construction and well adapted situation of the brain, the heart, the lungs, the liver, the bladder, the intestines, and other organs of life; but it suits our present purpose to generalize, rather than to descend to particulars, which would burden the memory without illuminating your mind. However, when you contemplate an animal body, you can perfectly comprehend, and will not forget to notice, the numerous instruments which are put together, and often within a very narrow compass. In the single ounce of matter which composes the body of a sparrow, we see all the instruments necessary for eating, for digestion, for respiration, for seeing, for hearing, for smelling, for walking, for flying, for the performance of every animal function and of every motion. All the parts of the complicated machine are perfectly appropriate, completely adapted to their respective uses, and all disposed with the most exact organization.

You will, my dear sir, readily confess, that this general view of the animal frame is sufficient to demonstrate the agency of an All-wise and Almighty mechanist in its formation. I shall, therefore, in conformity to my original design, limit myself chiefly to this general exhibition, and only mention two or three particulars which might possibly escape your attention, although too important to be left unnoticed.

Of the covering of animals, both quadrupeds and volatiles, you have by this time had an opportunity of contemplating the perfect adaptation to their various circumstances of living. I shall therefore only remind you, that the furs of all animals are known to grow thicker and warmer in winter than in summer, and in cold than in hot climates. Animals also which constantly live on dry land, such as bears, foxes,

hares, &c. have the hair closer set on the back than the belly, an arrangement admirably well adapted to fortify them against the rains and storms from above; while the fur of the beaver, and the feathers of water fowl are thicker and warmer on the belly, and peculiarly contrived for resisting the attrition and penetration of the cold and watery fluid to which they are so much exposed; and you will soon have an opportunity of perceiving that the covering of fishes is equally well calculated for their situation. The most unequivocal marks of an all-wise and benevolent design are obvious through the whole of this arrangement.

If, my dear Sir, you have ever been in a butcher's shop, and seen the heart of a dead animal, you will acknowledge that the wisdom of the Creator is there displayed beyond all the powers of human comprehension. From the softness and extreme delicacy of the heart, and the complexity of its mechanism, you would suppose it liable to frequent derangements, and to be injured by the slightest causes; and, in fine, you would from its texture conclude, that its regular and uniform motion could not long continue. This wonderful machine, however, goes with greater regularity than any watch, at the rate of about four thousand one hundred and fifty strokes every hour, night and day, for eighty or ninety years together in man, and much longer in some animals, and continues for this length of time its action without disorder or interruption.

The examination of the eye might alone convince the infidel and the sceptic of the existence of a Supreme Intelligencer, and of his indubitable agency in the system of nature. This is evident, from the exquisite mechanism of its structure, the existence of its powers, its commanding situation, so suited to its exercise, and the manner in which it is placed in a deep bony socket for its preservation. The contemplative mind must be struck with astonishment in reflecting on the correctness of the picture formed at the bottom of the retina. In viewing a distant land-

scape, with its whole assemblage of constituent objects, hills, dales, forests, groves, rivers, fields, and buildings; variously intermixed, which compose the scenery, did you ever, my dear Sir, consider, that all this multitudinous groupe, covering tracts of country to the extent of ten, fifteen, or perhaps twenty square miles, was brought within the compass of a sixpence in your eye, and yet all exactly delineated? When you reflect on this wonderful circumstance, you will find the fact incontestible, and the means by which it is produced, calculated equally to excite our admiration of the wisdom of the Creator, and our gratitude for his ineffable goodness,

The subject now under consideration would require a ponderous folio, rather than a short epistle, for every animal body is a complicated machine, composed of a number scarcely less complex. Every organ of sensation, and every instrument of action, exhibits an all-wise contrivance: the smallest appendages display the most exquisite workmanship: every feather of a bird, every quill of its wing, is a mechanical wonder. From these considerations, you cannot but perceive the absurdity of the doctrine of blind chance, when every part of creation evidently appears the effect of intelligence and design, and irresistibly leads us to the contemplation of that Being, from whose infinite wisdom alone such harmony could result.

While I prepare to render still more extensive your survey of the world of life, I flatter myself that I shall leave your mind strongly impressed with these important reflections, and with sincere affection and esteem,

I am, my dear Sir,

Yours, &c.

LETTER LIV.

"From icy oceans, where the whales
Toss in foam their lashing tails;
Where the snorting sea-horse shows
His ivory teeth in grinning rows."

MISS ATKIN.

DEAR SIR,

FROM the inhabitants of the earth and the air I shall now attend you in taking a cursory view of the natives of the deep, and endeavour to exhibit to your inspection a few of the most striking and interesting objects among those numerous tribes of fishes which constitute the third great division of animated nature.

Of these, the ocean is the grand receptacle, although the rivers and streams produce, or contain great numbers of different kinds; and hence arises the general distinction between fresh water and salt water fish.

Of this numerous and prolific race, Linnæus reckons upwards of four hundred different species; but it is extremely probable that numbers are concealed in the vast extent and profundity of the ocean, which have never yet been exposed to human observation. The wants or the luxury of mankind, have drawn numbers from their watery abodes, and made us acquainted with their formation, but their history is, for the most part, little known. Their migrations, their pursuits, and their pleasures are, in a great measure, concealed by that element which affords them a residence. As far, however, as we can make probable conjectures on the history of animals so little exposed to our observation, the whole circle of their pursuits is confined to the preservation of their existence and the propagation of their species; and an incessant desire of food appears to be their domineering impulse. Their digestive faculties also seem extraordinary, for their stomachs can soften the most callous substances. The larger of the species subsist

by devouring the smaller; and their whole lives are passed in a state of depredation.

In this circumstance we seem to discover the reason why the predatory system exists among animals. You will, my dear Sir, recollect the observations made on this subject in the former part of our correspondence, relative to the ferocious quadrupeds of the feline genus, the arguments their adduced to reconcile the state of incessant hostility subsisting in the brute creation, with the paternal beneficence of the Author of Nature, will be abundantly illustrated, by contemplating the same system, and reflecting on its necessary existence among the inhabitants of the deep. The sea does not, like the land, afford a profusion of vegetable food for the support of animal life, and consequently without some other supply, the immense regions of water must have remained uninhabited, and have presented nothing more than one vast extent of inanimate matter. This immense vacuum in the system of animated nature, infinite wisdom and goodness has prevented, by ordaining that the natives of the deep should support one another's existence in a situation which produces no other aliment. Here we plainly perceive the wonderful œconomy of nature, and how justly creative wisdom has balanced circumstances, and provided against all possible consequences.

The greatest part of quadrupeds and volatiles are supported by those vegetable aliments which the earth abundantly produces: the rest prey upon those that might multiply to a nuisance, and as we have, in the place alluded to, already observed the fecundity of each species is, with an admirable justness and calculation, proportioned to its exposure to destruction. Among the finny inhabitants of the ocean, this system, which seems so mysterious among land animals, appears far more luminous, far more easy to comprehend, and perfectly reconcileable with the beneficence of the Universal Parent. Fishes, being destitute of those resources which quadrupeds and volatiles possess, have no other means of subsistence than that of devouring one another, and consequently

are all predaceous: the larger devour the smaller, and the smallest of all support themselves by the spawn which the others produce. For the supply of this continual demand, Nature has rendered the finny tribes extremely prolific, so that among them propagation and destruction keep as nearly as possible an equal pace, and counterbalance each other.

By this wonderful arrangement, which, on strict examination, will appear both wise and beneficent, myriads of creatures which could not otherwise have had a place in the scale of existence, enjoy for a season their portion of life with a degree of happiness suited to their faculties, and then serve for the support of others; and in this manner the blessings of existence is perpetuated in the deep recesses of the ocean, which, without this wise regulation, must have afforded no means of subsistence to any kind of living inhabitants. Thus, my dear Sir, you will perceive, that a disposition which seems, on a superficial view, incompatible with our confined ideas of the goodness of the Author of Nature, appears, after a more accurate examination, to be nothing less than a grand display of his infinite wisdom and extensive beneficence.

Creative wisdom has endowed every creature with faculties suitable to its place in the scale of being, and fishes undoubtedly possess a share of happiness corresponding with their nature and situation. They appear, it is true, inferior to beasts and birds, in acuteness of sensation and instinctive sagacity; and their brain is found to be exceedingly small in proportion to their size, when compared with the same organ in the two former classes of animal life. These deficiencies are, however, in some degree compensated by their astonishing longevity, several species being known to live more than a hundred years; and if the inhabitants of the ocean be capable of fewer enjoyments than those of the earth and the air, they are, by residing in an element that is liable to little variation, far less exposed to the inconveniences resulting from the changes of the atmosphere, and the inclemencies of the weather.

The longevity of fishes, however, is less astonishing than their singular fecundity. A single cod fish is said to produce at a birth, if they escaped depredation, no fewer than nine millions of young, a number equal to that of the inhabitants of all England. The flounder produces at once above a million, and the mackarel not less than five hundred thousand. From this abundant fecundity, as it has been already observed, the predatory system of fishes is supported, and their allment supplied.

Fishes are generally divided into the cetaceous, or whale kind; the cartilaginous, or gristly kind; the spinous fishes, so called from the resemblance which their bones have to sharp thorns; and the testaceous kind, which are distinguished by being covered with shells instead of scales.

It is not my intention, my dear Sir, to trouble you with a nomenclature of a race of animals far remote from general observation, and with most of which you will, in all probability, never have an opportunity of being acquainted. I shall, on the contrary, select for your contemplation, such as are of the greatest importance in commerce, and of the greatest utility to man, or by reason of some remarkable property peculiarly interesting.

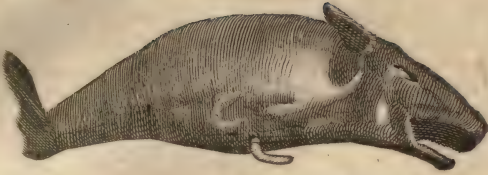
THE WHALE

may, with propriety, be reckoned one of the most interesting of those animals which have their residence in the deep. If we consider its stupendous size, it must be regarded as one of the greatest curiosities of animated nature; and if its commercial importance be justly appreciated, it will be esteemed an object worthy of the attention and examination both of the naturalist, the politician, and the merchant.

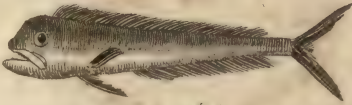
Of the whale kind there are seven species, of which the great greenland whale, and the spermaceti whale, or cachalot, are the most important in commerce, and to this country are even a national concern.

THE GREAT GREENLAND WHALE

is that fish, for the catching of which such vast preparations are made in different parts of Europe, and



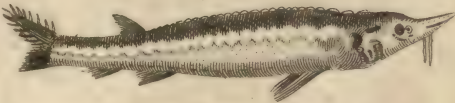
Whale.



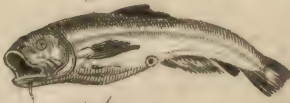
Dolphin.



Shark.



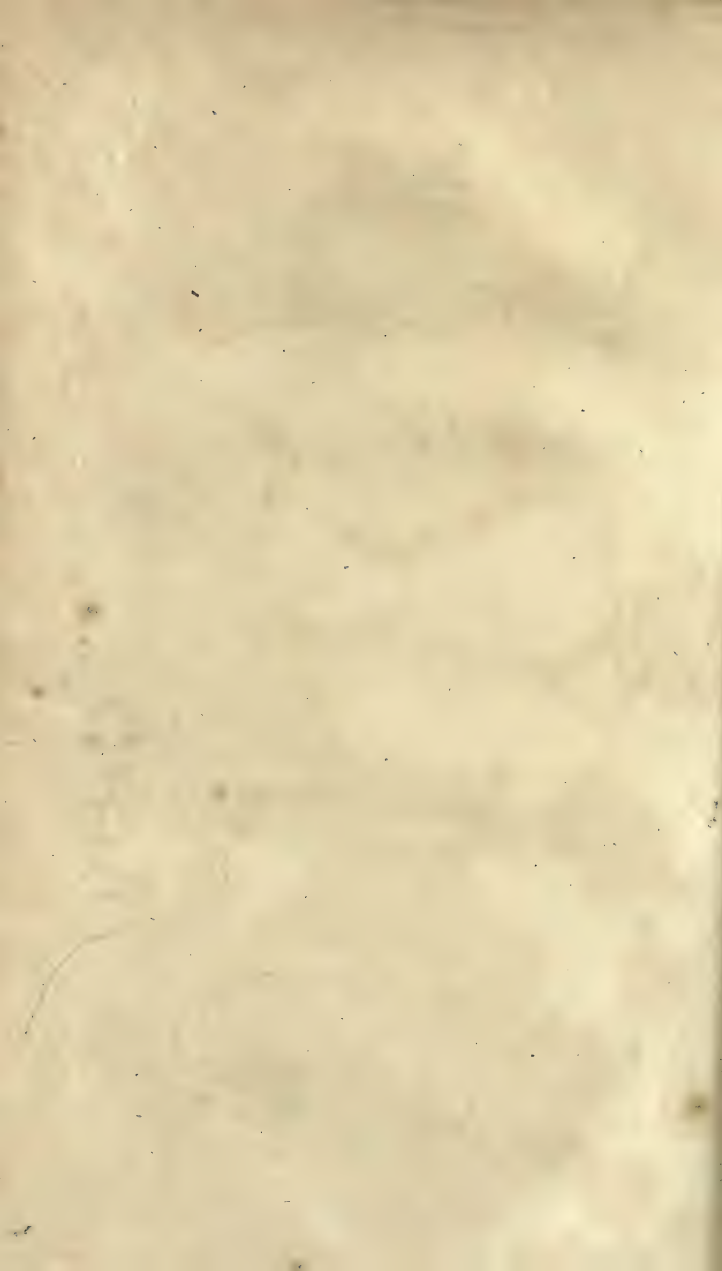
Sturgeon.



Cod.



Salmon.



particularly in Great Britain. This is, beyond dispute, the largest animal in the creation, of which we have any certain account. It is indeed of so enormous a size, that it usually measures from sixty to seventy feet in length, and its head constitutes a third part of its bulk. The fins on each side are from five to eight feet in length, composed of bones and muscles sufficiently strong to give to this great mass of body activity of speed. The tail is about twenty-four feet broad, and when the whale lies on one side, its stroke is tremendous. The skin of this fish is smooth and black, and in some places marbled with white and yellow, which, running over its surface, has a beautiful effect. The outward or scarf skin of the whole, is no thicker than parchment; but underneath another appears about an inch thick, covering the fat or blubber, which lies beneath to the thickness of ten or twelve inches, and when the fish is in health, is of a beautiful yellow colour. The cleft of the mouth is about twenty feet long, which, in general, is about a third part of the animal's length; and the upper jaw is furnished with barbs, which lie like the pipes of an organ, the greatest in the middle, and the smallest on the sides. These compose the whalebone, the, longest spars of which are found to be not less than eighteen feet. The tongue seems but one great lump of fat, and produces several hogsheds of blubber. The eyes are not larger than those of an ox: they are placed towards the back part of the head, the most convenient situation for enabling them to see before and behind, as well as above, where their food is principally found. They are guarded with eye-lids and lashes like those of quadrupeds, and seem to possess great acuteness of sight. Their hearing also appears to be no less perfect; and they perceive at a great distance any danger that is preparing against them.

It has been already remarked, that the substance called whalebone, is taken from the upper jaw of the animal, and is very different from its real bones, which are hard like those of large quadrupeds, and

full of marrow. Two enormous bones sustain the under lip, placed against each other in the form of a crescent. These bones are very commonly not less than twenty feet long. They are often seen standing as ornaments in gardens, and are generally mistaken for the whale's ribs.

After nine or ten months of gestation, this huge fish brings forth its young, which it suckles during a whole year, in the same manner as quadrupeds. The food of the whale consists chiefly of a small black insect, about the size of a bean, which is seen floating in clusters on the surface of the waters.

This enormous fish, however, notwithstanding its prodigious bulk and strength, meets with a number of enemies which it cannot resist. There is a small shell-fish called the water louse, which sticks to its body, insinuates itself under the skin, and feeds upon its fat. The sword-fish is also its inveterate, and one of its most terrible enemies. "At the sight of this little animal," says Anderson, "the whale appears agitated in an extraordinary manner. Wherever it appears, the whale perceives it at a distance, and flies from it in an opposite direction. "I have been myself," continues he, "a spectator of their terrible encounters. The whale has no instrument of defence except its tail; with that it endeavours to strike the enemy, which a single blow taking place, would effectually destroy; but the sword fish, which is as active as the other is strong, avoids the stroke. Then bounding into the air, it falls upon its enemy, and endeavours not to pierce him with its pointed beak, but to cut him with its toothed edges. The sea all around is immediately dyed with the blood preceeding from the wounds of the whale, while the enormous animal endeavours in vain to reach its assailant, and strikes with its tail against the surface of the water, making a report at each blow louder than that of a cannon."

There is also another, and a still more formidable enemy, called by the New England fishermen, the killer. It is said that a number of these fishes surround the whale like as many dogs baiting a bull.

Some attack him before, others behind, until at last, being lacerated in every part by their teeth, he is totally subdued, and becomes their victim.

Against its adversaries of the deep, however, the whale might often prevail by force, or escape them by cunning; but man is a more dexterous and terrible assailant than all its other enemies; and destroys more of the species in one year, than all the rest in a whole century. That his assiduous and successful hostility has considerably diminished their numbers in that part of the world where they are chiefly sought, or at least expelled them in some measure from their ancient retreats, is evident from several circumstances; for at the first discovery of Greenland, when they were unaccustomed to molestation and pursuit, they came frequently into the bays, and were killed close to the shores; so that the blubber, being cut up, was immediately boiled into oil on the spot. The ships at that time took in only the pure oil and the whalebone, and all the business was consequently executed in the country; by which mode of proceeding a ship could bring home the produce of a far greater number of whales than it is possible to do in the present method of conducting the trade. Since that time, however, such numbers of ships arriving from Holland, Denmark, and several other parts, the whales took the alarm, and, as other fish, as well as birds and quadrupeds often do, began to forsake their accustomed haunts, and to seek more secure and peaceable retreats. They are now seldom found near the shores, but chiefly in the open spaces among the fields of ice in deep water, and at a considerable distance from land.

The whale fishery begins in May, continues all the month of June, and a part or the whole of July, according to their good or ill success; but whatever may be the case in that respect, the ships must depart and get clear of the ice before the end of August. The latest may therefore be expected in September, but those that have been speedily successful, may return in June, or early in July.

The advantages derived from the whale fishery by several European nations, and particularly Great Britain, are so well known, as to preclude the necessity of expatiating on the subject. I shall only desire you to observe, that near three hundred vessels sail from this country annually to Greenland and Davis's Straits, in this trade, and for the most part make profitable voyages.

The catching of whales in the Greenland seas, among immense masses of ice, presents one of the most curious scenes that are any where displayed in the whole circle of the transactions of mankind with the animal creation. These fields, or fragments of ice, which are as old as the world, are frequently more than a mile long, and above a hundred feet in thickness; and when they are first set in motion by a storm, nothing in nature can exhibit a more terrific appearance. No less than thirteen Dutch ships were in one season crushed to pieces among those ponderous masses. Perhaps the voyages made to those rigorous climates and frozen seas, for the purpose of catching whales, may be reckoned among the boldest and most arduous enterprises of man.

Every ship employed in this business is provided with six boats, to each of which six men are appointed for rowing, and a harpooner for striking the whale. Two of these boats are constantly kept on the watch at some distance from the ship. As soon as a whale is discovered, both the boats set out in pursuit of it, and if either of them can come up before the fish descends, which is known by his throwing up his tail, the harpooner darts his harpoon at him. As soon as he is struck, the men make a signal to the ship, and the watchman alarms all the rest with the cry of "fall! fall!" when all the other boats are immediately sent out to the assistance of the first. The whale, as soon as he finds himself wounded, runs off with amazing rapidity and violence. Sometimes he descends perpendicularly, and sometimes goes off in an horizontal direction, at a small depth below the surface. The rope that is fastened to the harpoon, is

about two hundred fathoms long, and properly coiled up that it may be given out as fast as is requisite, otherwise the whale would immediately sink the boat. At first, the velocity with which the line runs over the side of the boat, is so great, that it is constantly wetted to prevent its taking fire; but in a short time the strength of the whale begins to diminish, and the men, instead of letting out more rope, strive as much as possible to pull back that which is already given out. If the whole line belonging to one boat be run out, that of another is immediately fastened to it. This is repeated as necessity requires; and instances have been met with, where all the rope belonging to the six boats has been necessary, although half the quantity is generally sufficient.

When the whale descends and has run some hundred fathom deep, he is obliged to come up for air, and then makes so dreadful a noise with his spouting, that some have compared it to the firing of artillery. As soon as he appears on the surface of the water, some of the harpooners fix another harpoon in him, upon which he plunges again into the deep; and on his coming up a second time, they pierce him with spears, till he spouts out streams of blood instead of water, beating the waves with his fins and his tail, till the sea is all as a foam. He is then known to be near death, and the boats continue to follow him till he has totally lost his strength. When dying, he turns himself on his back, and is drawn on shore, or to the ship, if at a distance from land. He is then cut up, and his flesh or blubber generally put in barrels, and brought home, although formerly, as already observed, the oil was extracted in that country.

Every whale is computed to yield, on an average, from sixty to a hundred barrels of oil, of the value of about four pounds sterling per barrel, which, with the whalebone, is sufficient to prove the great importance of this fish considered in a commercial point of view.

The flesh of the whale is, among some nations, reckoned a dainty: and the inhabitants of Greenland are fond of it to excess. They not only eat the flesh

but drink the oil, which they consider as one of their first rate delicacies. The finding of a dead whale is a circumstance which they rank among the fortunate events of their lives. A number of them make their abode near it, and seldom remove until they have picked the bones. You will here, my dear Sir, reflect on the blessings of civilization; and in contemplating the wretched condition of men little advanced beyond a state of nature, be thankful to Divine Providence for having placed you in a country where plenty is procured by industry, and protected by judicious and equitable laws.

A skeleton of a whale about sixty feet long, is preserved in the exhibition rooms at Exeter 'Change. It has twenty-two ribs, eleven on each side, and fifty-four vertebra, or joints, in the back-bone.

THE NARWALE, OR SEA UNICORN, is less than the whale, not being more than sixty feet long: its shape is also more slender, and its fat less abundant. It is distinguished from all the other inhabitants of the deep by its tooth, which stands pointing out directly forward, and resembles a horn, being from ten to fourteen feet long. Of all the variety of weapons with which nature has armed the different tribes of animals, no other so large and so formidable is found. This tooth, or horn, as it is sometimes called, is as straight as an arrow, as thick as a man's leg, and wreathed, as we sometimes see twisted bars of iron. It tapers to a sharp point, and is whiter, heavier, and harder than ivory.

Notwithstanding its accoutrements for combat, its long and pointed tusks, prodigious strength, and extraordinary celerity, the narwhale is one of the most harmless of animals. It is seen peaceably sporting among the other great monsters of the deep, no way attempting to injure them, but apparently pleased in their company; and these powerful fishes, although furnished with such terrible weapons of destruction, are as inoffensive as a drove of oxen. They are much swifter than the whale, and would never be taken, if their escape were not prevented by those very tusks

which seem to be their principal defence. Being of a gregarious and social disposition, they are always found in herds of several together; and whenever they are attacked, they crowd so closely, that they are embarrassed by the entanglement of their horns, and prevented from descending towards the bottom. The fishermen, in consequence, seldom fail of making sure of one or two of the hindmost.

THE SPERMACETI WHALE, OR CACHALOT, is not so large as the whale, and consequently does not afford so great a quantity of oil. The head is so disproportioned to the body, that it constitutes the half of its bulk; and the throat is so formidably capacious, that it is supposed to be capable of swallowing an ox. Its appetite is at the same time so voracious, that it often devours a shoal of fishes at once. This may, with propriety, be called the tyrant of the deep, and Linnæus informs us, that dolphins and porpoises are frequently driven ashore by this devouring monster.

But although this voracious fish be so terrible to the other inhabitants of the ocean, mankind consider it as a most valuable animal, on account of the excellent drugs it affords. These are spermaceti and ambergris, which are so universally used as articles of luxury or medicine, that distant and dangerous voyages are undertaken solely for the purpose of taking this fish; and its capture is esteemed a sufficient compensation for all the expence and risk attending the enterprise.

The genuine spermaceti which is naturally produced is nothing but the brain of this fish; and one of them will yield about sixteen barrels of this valuable commodity. By a simple process lately invented, all the oil which it produces may be converted into spermaceti. This is said to be performed by boiling it with a lye of pot-ash, and hardening it like soap. Of this substance candles are made, and it is found to be an excellent, as well as a cheap substitute for wax. The ambergris is found where the seminal vessels are usually placed in other animals. It is found in bags

of three or four feet long, in round lumps of from one to fifteen pounds weight. The largest ever seen of these weighed twenty pounds. This substance is not found in all parts of this species, but only in the oldest and the strongest. The evident utility of the former, and the real or imaginary virtues of the latter of these drugs, have rendered the spermaceti whale an object of considerable importance in the commercial system.

THE GRAMPUS, THE DOLPHIN, AND THE PORPOISE, seem all to belong to the same genus; for their characteristic distinctions are not very considerable, and their general history appears to be the same. The grampus, which is the largest of the three, seldom exceeds twenty feet in length, and its head is remarkably flat. The porpoise very much resembles the former in shape, except that its snout is more like that of a hog, and the whole length of this fish seldom exceeds eight feet. The dolphin likewise bears a striking similitude to both, except that its snout is longer and more pointed. All these fishes have dorsal fins, and large heads, and they seem perfectly to agree in their appetites and habits, being equally voracious and active.

The extraordinary agility of these animals renders their capture extremely difficult. They seldom remain a moment above water; but their rapacious spirit of depredation sometimes exposes them to danger, and a shoal of herrings often allures them out of their depth. In these cases the voracious animal continues to flounce about in the shallows until the returning tide comes to its relief. All this tribe, and particularly the dolphin, are not less swift than destructive; and no fish whatever could escape them, but from the awkward position of the mouth, which is placed almost under the head. With this disadvantage, their depredations are so great, that they have justly been styled the plunderers of the ocean. We have, however, already observed, that the tyranny which they exercise over a great part of the inhabitants of the

deep, is compensated by that which they themselves experience from the cachalot, or spermaceti whale.

I will now leave you to reflect on the wondrous works of the Creator, displayed in the cetaceous fishes, and on their utility to mankind, while I employ myself in selecting for your observation a few of the most remarkable of the cartilaginous kind. For the present I shall therefore beg leave to subscribe myself,

Dear Sir,
Your's, &c.

LETTER LV.

"His jaws horrific armed with three-fold fate,
Here dwells the direful shark."

WE have often observed that nature proceeds by successive gradations, and you must in perusing my last letter have perceived, that the cetaceous fishes, descend only one step downwards from the quadruped race. You will now find that the cartilaginous kind is still farther removed from that class of animals.

The leading characteristic that distinguishes this kind of fish is their having gristles instead of bones, and from their pliancy they seem to have no bounds set to their dimensions, but are supposed to increase in size as long as they live.

Cartilaginous fishes seem to constitute the connecting link between the cetaceous and the serpious kinds, and to unite some of the principal properties of both in their conformation. Like the former they have organs of hearing and lungs, and like the latter they have gills, and a heart without a partition. This double capacity of breathing is one of the most remarkable features in the history of animated nature.

They may be in general divided into five classes, first those of the shark kind, with a body growing less

towards the tail, a rough skin, the mouth placed far beneath the end of the nose, and five apertures on the side of the neck for breathing. The next division is that of the flat-fish, which may by its form be easily distinguished. The third division is the slender snake-shaped kind, the fourth that of the sturgeon; and in the fifth may be comprised the sun-fish, the sea-snail, the fishing frog, and a number of other varieties, each of which has something peculiar in its form that distinguishes it from the rest. The devouring fish, of which I am now going to describe the terrific appearance and rapacious habits, is too dreadfully remarkable to fail of attracting your attention.

THE SHARK

is of all the inhabitants of the deep the fiercest, the most formidable, and the most voracious. It comprises several varieties; and the smallest of the kind are formidable to fishes very far superior in size. The white shark, may sometimes almost rank among the smaller whales, in respect of magnitude; as it is often seen from twenty to thirty feet in length. Some assert that this fish has been found to weigh not less than four thousand pounds, and we are told of one in particular, that had a whole human corpse in his belly. The head of the shark is large and somewhat flattened, the snout long, and the eyes fierce, large, and fiery. The mouth and throat is enormously capacious, so that it is capable of swallowing a man without difficulty. Its furniture of teeth, however, is still more terrible, and exhibits a most formidable apparatus of destruction. These are set in six rows, and are said to amount to a hundred and forty-four in number. With these both the upper and under jaws appear planted all over; and what is extremely singular, the fish has the power of erecting and depressing them at pleasure: when it is at rest they lie flat in its mouth, but the moment that it prepares to seize its victim, these dreadful instruments of destruction are erected in rows.

The shark is indisputably the fiercest depredator that swims in the ocean; for neither the dolphin, the

grampus, nor even the spermaceti whale can, in regard to ferocity, boldness and indefatigable activity, bear any comparison with this terrible devourer. No other fish can swim so fast: his agility is such that he outstrips, with ease, the fastest sailing vessels.

Such amazing powers united with such appetites for destruction would depopulate the ocean had not creative wisdom ordained a conformation of the jaws of this fish, which serves in some measure to counteract its insatiable voracity. The upper jaw projects so far over the lower that the shark is obliged to turn on one side to seize his prey, and as this takes some small time in the performance, the animal pursued often takes that opportunity to make its escape.

Notwithstanding this disadvantage the ravages of the shark, however, are dreadful. He is the dread of sailors in all hot climates, where he generally attends the ships in expectation of what may drop overboard. A man who happens to fall into the sea at such a time, meets certain destruction. A sailor who was bathing in the Mediterranean near Antibes, in the year 1744, perceiving one of those terrible monsters approaching him, from the extension of its jaws, anticipating his fate, called out in an agony of terror to his companions to throw out a rope. The rope was immediately thrown, and in eager haste secured his hold; but in the very moment when his comrades were drawing him up to a place of safety, the shark sprang upon him, and at one snap snatched off one of his legs. This ferocious and formidable fish has been known to bite a person asunder in the middle, and indeed were I to mention all the dreadful instances of its voracity, it would spin out this article to an immoderate length. It is, however, to be observed, that bathing in the sea, which in hot climates is so delightful and salutary, is attended with great danger in those parts where the shark abounds; for his approach is sudden, and often unperceived, his spring instantaneous, his aim certain, and his bite fatal.

Divine wisdom, however, has not permitted that one creature should, with uncontrolable despotism,

tyrannize over the rest. The shark, so formidable on the empire of the ocean, has, exclusive of man, other enemies to fear. The remora follows him every where. This little fish has the power of adhering to any thing on which it fixes, in the same manner as a cupping-glass sticks to the body. From this adversary, the shark, with all his powers of annoyance and defence, is not able to disengage himself. It fixes itself upon his body, sticks immoveably to it, sucks away its moisture, and produces a gradual decay.

Of the shark there are many varieties; but they appear all to have the same ferocious propensities, and in proportion to their strength and size, to be equally formidable both to man and to their fellow inhabitants of the deep; and all are said to have a predilection for human flesh.

One very curious circumstance has been observed relative to the shark. The young of this fish will, on the appearance of danger, take refuge in the belly of the mother, by swimming down her throat. This has been supposed peculiar to the blue shark, but Mr. Pennant thinks it common to the whole genus.

I shall now, my dear Sir, say something of the

RAY KIND,

of which the different species bear to each other so strong a resemblance, as not to be easily distinguishable; and a stranger to this tribe may imagine that he is going to handle a skait, when he is instantaneously paralyzed by the torpedo, or suppose that he has caught a thornback, until he finds himself stung by the fire-flare.

Of all the larger fishes of the ocean, this kind is the most numerous; a circumstance which they owe, in a great measure, to their size; for, except the great white shark, and the spermaceti whale, no other rapacious fish has a throat sufficiently capacious to swallow them; and their prickly spines render them a still more dangerous morsel. The size of some of them is indeed so large, that even the shark is not able to devour them. Those caught on the British coasts have sometimes been found to weigh two hun-

dred pounds, which is nothing in comparison of their enormous bulk in some other seas.

It is chiefly during the winter season that our fishermen take the ray; but the Dutch, who are indefatigable, begin earlier, and fish with greater success. The value of their capture generally rewards them well for their assiduity, as the thornback and the skait are very good food, and weigh from eight or ten, to two hundred pounds; but sometimes their lines are visited by the very rough ray, the fire-flare, or the torpedo, which are very unwelcome intruders.

The rough ray inflicts only slight wounds with the prickles that cover its whole body, of which there is not a single part that is not armed with spines. Of these the puncture cannot be otherwise avoided than by seizing the fish by the little fin at the extremity of the tail.

THE FIREFLARE, OR STING RAY,

is a very singular species, and seems to be the terror of every fisherman. It is armed with a barbed dart, or sting, about five inches long, which is fixed in the tail. Concerning the formidable powers of this instrument, a number of fables have been invented and handed down from ancient to modern times. - It is certain that the fish is capable of inflicting, with this weapon, a deep and dangerous wound. Modern naturalists, however, do not suppose that it possesses the poisonous qualities ascribed to it by the ancients, as well as by many in later times. The sting of this animal, which is so terrible to the apprehension of all fishermen, appears to be only an instrument, which the Author of Nature has, in his universal bounty, given it for its own preservation.

THE TORPEDO, OR ELECTRIC RAY,

is singular both in its conformation and its qualities. Its body is almost circular, and thicker than that of any other of the ray kind. The skin is of a yellowish colour, soft and smooth, and marked with large annular spots: the eyes are small, the tail tapers to a point, and the weight of the fish varies from one to fifteen pounds.

Although this wonderful creature does not, on inspection, appear to be furnished with any extraordinary qualities---although it has no muscles formed for great exertions, nor an internal conformation perceptibly differing from the rest of the ray kind; yet it possesses the unaccountable power of benumbing, the instant that it is touched, not only the hand and the arm, but sometimes even the whole body. The shock which it gives greatly resembles that of an electrical machine, instantaneous, tingling, and painful. According to Kämpfer's relation of his own experiments, scarcely any difference can be discovered, between the shock produced by electricity, and that given by the torpedo, except that the latter is accompanied by some deleterious symptoms, such as an universal tremor, a sickness of the stomach, a general convulsion, and a total suspension of the mental faculties.

The nature of that principle which in the torpedo produces these extraordinary effects, are, and probably will for ever remain a mystery; but we have facts sufficient to ascertain the manner in which this fish exerts its paralysing powers.

We cannot here, my dear Sir, restrain our admiration, when we consider how wonderfully infinite wisdom has, by a hidden and mysterious quality, enabled the torpedo to set at defiance the attacks of creatures endowed with the most formidable powers.

There are two other species of the ray, which, on account of their singularity, merit attention.

THE SEA DEVIL

has its snout divided as it were into two horns, and its sides are terminated by the fins. It grows sometimes to the length of seven feet.

THE STURGEON

constitutes another distinct class. It is long, pentagonal, and covered with five rows of large bony knobs, one on the back, and two on each side, with a number of fins to promote its velocity in swimming. Though the sturgeon be nearly as large as the shark, and its figure almost as terrible, it is notwithstanding

exceedingly inoffensive. Of this fish there are three distinct kinds, the common sturgeon, the caviar, and the isinglass fish.

About the beginning of summer, the sturgeons come up the rivers to deposit their spawn. They visit in this manner every country of Europe; but the inhabitants along the banks of the Po, the Danube, and the Wolga, are those who derive the greatest advantage from the sturgeon fishery. At Pillau, the shores are formed into districts allotted to companies of fishermen, at the annual rent of about three hundred pounds for each distinct fishery.

The sturgeon, when pickled, is well known, and greatly esteemed throughout all Europe. A very considerable trade is also carried on with the roe of the caviar, preserved in a particular manner; it is also made from the roe of the common sturgeon; but as it is chiefly prepared from the former, it derives from that species the general name of caviar. This, however, is more in request in the other countries of Europe than in England. It is one of those high-relished viands, to which the appetite must be formed by degrees, and which, although formerly esteemed at the most elegant tables in this country, is now but little in use among us. It is, however, still a considerable article of merchandise among the Turks, Greeks, and Venetians. It somewhat resembles soft soap in consistency: but is of a brown colour, and is frequently eaten with bread instead of cheese.

The isinglass fish, the third species of the sturgeon kind, furnishes the still more valuable commodity which derives from it its name. This fish is caught in great quantities in the Danube, and some other large rivers, from the month of October to that of January. It is sometimes found of the weight of four hundred pounds, and seldom under fifty. Its flesh is soft and flabby, and not held in great esteem; but it is chiefly sought for the commodity which it furnishes.

To this description of a race of fishes so interesting,

by reason of the profits and conveniences derived from them, I shall subjoin a short account of one, which, from the singularity of its conformation, is scarcely less curious than the former are interesting.

THE FISHING-FROG

in shape very much resembles a tad-pole, its head being equal in size to all the rest of its bulk. It grows to the length of five feet; and Mr. Pennant mentions one taken near Scarborough, the mouth of which was not less than a yard wide. The under jaw of this animal is much longer than the upper. The eyes are placed on the top of the head, and encompassed with prickles. The colour of the upper part of the body is dusky, but the belly is white, and the skin smooth. The fishermen in general have a great regard for this monster, as it is known to be an inveterate enemy to the dog-fish: the body of these voracious creatures, being often found in its stomach: on this account, therefore, whenever they catch the fishing-frog, they generally set it at liberty; and it must be considered as a lucky circumstance in its favor, that it has thus conciliated their friendship.

THE SEA PORCUPINE,

from its extraordinary figure, deserves to be mentioned. Like the land porcupine, it is covered with long prickles, which point every way; and when it is enraged, it can blow up its body as round as a bladder. These frightful fishes consist of several different species, and are of various sizes, some not larger than a foot-ball, and others as large as a bushel. Their bodies are almost round, with the mouth like that of a toad, and enormously wide. When caught with a bait, the spines, which before laid flat, are immediately erected, and the animal appears armed at all points, so that it is impossible to lay hold of it in any part. It must, therefore, be dragged by the line to the shore, where it soon expires.

Having exhibited a slight view of some of the wondrous works of the Creator, displayed in this class of fishes, I shall prepare to diversify the subject, by a

concise description of a few of the next class, and remain with every sentiment of respect,

Dear Sir,

Your's, &c.

LETTER LVI.

"Thus the mail'd tortoise and the wand'ring *rel*,
Oft to the neighb'ring beach with silence steal."

OPPIAN.

DEAR SIR,

I HAVE already informed you that the third grand division of fishes is that of the spinous, or bony kind. These are obviously distinguished, by having a bony covering to their gills; by being furnished with no other instrument of respiration than gills; by their bones, which are sharp and thorny; and by their tails, which are placed in a situation perpendicular to the body.

The bones of this order of fishes are exceedingly numerous and sharp pointed; and, as in quadrupeds, so in these, they are the props or stays to which the muscles, which move the different parts of the body, are fixed. The history of any one of this order in its general feature, includes that of all the rest. They breathe air and water through the gills, and live by rapine, each devouring such animals as it is able to swallow. They propagate not like the cetaceous tribes, which bring forth their young alive, nor by distinct eggs, like most of the cartilaginous tribes, but by spawn, producing hundreds of thousands at one time.

It is difficult to account for the different operations of the same element upon animals that appear to have the same conformation. To some fishes bred in the sea, fresh water is immediate destruction; and, on the other hand, some that live in our lakes and ponds cannot bear the salt water. Philosophy may form plausible hypotheses; but these can go no farther than probability, nor claim any higher merit than

that of ingenious conjecture. Of the real history of fish but little is yet known; and man has not the means of accurately observing the manner and habits of animals which pass their lives in the immense abyss of the waters. Some tribes, however, are known to spend part of their time in the rivers, and part in the ocean. We have already mentioned this circumstance in speaking of the sturgeon, but that is not the only fish of this migrating character. The salmon, the shad, the smelt, and the flounder, annually forsake the ocean, and ascend the rivers to deposit their spawn. This, indeed, seems the important business of their lives; and there is no danger which they will not encounter, to find a proper place for the deposition of their future offspring. The salmon is, upon these occasions, known to ascend rivers to the distance of five hundred miles from their mouths, and not only to brave the dangers arising from various enemies, but also to spring up cataracts of an amazing height. The length of the voyages taken by these fishes is short in comparison of the annual migrations of some tribes, of which the residence is continually in the ocean. Of this kind are the cod, the haddock, the mackerel, the herring, the pilchard, and a variety of others. The fecundity of these creatures exceeds our conception, and would in a short time outstrip all calculation. A herring, if suffered to multiply unmolested, and its offspring to remain undiminished during the space of twenty years, would shew a progeny many times greater in bulk than the whole earth. This extraordinary and incalculable fecundity, as already observed, in our general remark on fishes, is the basis of support to the numerous inhabitants of the ocean, and exhibits in the clearest light, and the most striking point of view, the all-wise and comprehensive plan of the great Creator. Although spinous fishes in general produce by spawn, yet there are some, as the eel and the blenny, that bring forth their young alive. In regard to the growth of fishes, it appears that they are

slow in attaining to their full size, that they are a long time liable to become a prey to others before it come to their turn to be destroyers.

The fishes of this order are exceedingly numerous, various methods of classing them have been invented by naturalists. As your design, my dear Sir, is to study Nature only in its general appearances and most striking particulars, without entering into those minute investigations, which are compatible only with a life of leisure; I have in my exhibitions of her various forms, endeavoured to avoid embarrassing you with the multiplied distinctions of systematical writers. Here, however, where the varieties of animal life are so numerous, some kind of classification is necessary, in order to form distinct ideas. The simplest, as well as the most luminous, seems to be that of Linnæus, who ranks them in four grand divisions, according to the position of their fins.

The first division consists of those which that celebrated naturalist denominates

APODES

of which the principal distinctive character is, that they have no ventral fins.

THE COMMON EEL

is the first genus in this order, and includes a variety of species. It may be considered as the most universal of all fishes, and is so generally known, that any description of it is unnecessary. It frequents the fresh waters, the ponds, ditches, and rivers of almost every country, yet it is scarcely ever found in the Danube, although it abounds in the lakes and rivers in Upper Austria. It is a singular fish in regard to many particulars of its natural history, and in some respects bears a great resemblance to the serpent tribe.

THE CONGER EEL

differs in many respects from the common eel, as it lives in the ocean, or at the mouth of great rivers, and grows to an enormous size. Some have been taken which measured ten feet and a half in length, and eighteen inches in circumference. The flesh of

LETTER LVI.

the young ones, which are commonly called elves, is exceedingly delicious.

THE ELECTRICAL EEL

is not only the most remarkable fish of this kind, but one of the most extraordinary creatures that nature, in her incalculable variety, has produced. It is a fresh water fish, found in the river of Surinam.

For the most important particulars relative to the description and history of this natural phænomenon, we are indebted to Mr. Bancroff and Dr. Gordon, of South Carolina.

The electrical eel gives to any person, or number of persons joining hands, that touch it, a most violent shock, which, like that of electricity, may be communicated through a metallic conductor. This shock is indeed attended with all the phænomena and effects of that produced by the electrical machine, so far as experiment has hitherto enabled us to discover. A power so extraordinary has undoubtedly been given to this fish, as well as to the torpedo, by the all-wise and beneficent Creator, as a means of defence against enemies beyond comparison superior in strength and agility.

The second grand division by which Linnæus distinguishes fishes of the spinous kind, is the

JUGULARES,

of which the general characteristic consists in the position of the ventral before the pectoral fins; it contains five genera, and about thirty-five species.

Consistent with the brevity of my plan, I shall, my dear Sir, particularize only two of this order, one the most conspicuous by its beauty, and the other the most remarkable for its importance and extensive utility.

THE DRAGONET,

which is about ten or twelve inches long, with a large head, and a body slender, round, and smooth, is one of the most beautiful of the inhabitants of the deep. The colours of this fish are amazingly resplendent, exhibiting a delightful variety of white, blue,

and yellow. The blue in particular is inconceivably beautiful, and shines with all the lustre of the sapphire. The throat is black, and the membranes of its fins are delicately thin. Pontoppidan calls this species the flying fish; but whether it makes use of its fins as the means of elevating itself in the air, is a circumstance which has not yet been ascertained. This fish is found in all the different latitudes from Spitzbergen to the Mediterranean, and is not uncommon on the Yorkshire coast.

From this exhibition of brilliancy in a tribe of the puny race, I shall now, my dear Sir, as I have already hinted, call your attention to a display of commercial utility existing in another of this numerous class.

THE COD

is a most extensive genus, including a variety of well-known and useful fishes; and is so commonly seen in our markets, that little need be said of it by way of description. It is short in proportion to its bulk. Its colour cinerous on the back, and white on the belly. There are, however, in this fish, many varieties, in regard to colour as well as size; but all are distinguished by an unfurcated tail, three soft fins on the back, the ventral fins slender and pointed, and a sort of small beard at the extremity of the lower jaw.

The famous fishing banks of Newfoundland, and those which lie off Cape Breton, appear to be the tops of vast chains of submarine mountains, extending above five hundred miles in length, and surrounded with deep seas. These extensive shallows are, by the resort of the cod fish, rendered, if not intrinsically, at least ultimately, of more value to Great Britain than the mines of Potosi are to Spain. Previous to the discovery of the banks of Newfoundland, the seas of Iceland, and those which surround the Hebrides, contained the principal, and almost the only cod fisheries, and were in consequence the grand resort of ships from most commercial countries.

The fishing season on the banks of Newfoundland commences about February, and ends in May; the

fish being then in the highest perfection, and the state of the atmosphere the most proper for its curing. The method of taking them is by the hook and line, and the fishermen draw them in as fast as they can throw out for them. Stages are erected along the shore for salting and drying the fish; and the numbers caught would be sufficient to exterminate the species, had not the wisdom of Providence bountifully ordained that the fecundity of this fish, so beneficial to mankind, should keep pace with the annual depredations. This astonishing fecundity would surpass conception, as well as belief, were it not ascertained by experiment. Leewenhoeck counted nine millions three hundred and eighty-four thousand eggs in a cod fish of a moderate size. The fact exhibits a grand display of creative wisdom, in thus proportioning the measure of propagation and destruction in the system of animal existence.

The greatest part of the cod taken on the banks of Newfoundland, is disposed of in the Catholic countries of Europe during the time of Lent. Considerable numbers, indeed, are used in our own island; but these are mostly caught on our own coasts, and generally eaten fresh. The cod is also found in tolerable plenty on the coasts of Norway, in the Baltic, and in most parts of the British seas. More southward they are less plentiful, and are never seen further towards that quarter than the Straits of Gibraltar.

Thus, my dear Sir, you see in this fish an important object of attention, not only to the naturalist, but also to the merchant and the politician. If you consider the number of ships, and consequently of shipwrights, with other mechanics concerned in the different departments of ship-building, and also of sailors and fishermen employed in this trade, as well as in the herring and whale fishery, you will perceive what numbers of the human species derive their subsistence from these inhabitants of the ocean, of which the astonishing fecundity is to several nations, and particularly to Great Britain, an inexhaustible source of wealth.

Leaving you therefore a while to contemplate a picture so interesting and so pleasing,

I am, dear Sir,

Your's, &c.

LETTER LVII.

"Here the dorado and the gilt head glide,
With spots enamell'd, burnished too like gold."

DEAR SIR,

IN continuing our survey of the various tribes that inhabit the watery element, we now come to the third order of the Linnæan division, distinguished by the appellation of

THORAICI,

of which the position of the ventral beneath the pectoral fins, is the discriminative characteristic. In this order are comprehended seventeen genera, and upwards of two hundred and twenty species, a very few of which the conciseness of my plan will permit me to delineate.

THE GILT HEAD

derives its name from its predominant colour, the head being of a fine gold colour, and the sides of the same, but somewhat tinged with a brownish cast. It has only one back fin, which reaches the whole length of the body. Some of this species grow to the weight of ten pounds. It subsists chiefly on shell fish, and is found in deep waters, and near bold and rocky shores.

THE DORADO,

which in some degree resembles the preceding, but far exceeds it in the splendor of its golden tints; is an inhabitant of the tropical climates, and at once the most active and the most beautiful of the finny race. It is about six feet long; its back is all over enamelled with spots of a bluish green and silver colour; its tail and fins are of a golden hue; and all have a bril-

liancy to which nothing but nature's pencil can attain. The eyes are large, beautiful, and surrounded with shining circles of gold colour. In the seas where they abound, these fishes are always in motion, playing round the ships. They are continually in a state of active warfare, pursuing or pursued, defending themselves against the shark, or darting after the small fishes.

Above all others, the flying fish most abounds in these seas; and as it is a small animal, only of the size of a herring, it is chiefly sought by the dorado.

THE FLYING FISH

properly belongs to the fourth order, that of abdominales, to be spoken of hereafter; but to render in this place the picture more complete, I shall anticipate its history, and exhibit it in the same view with the dorado.

The head of the flying fish is scaly; its belly is angular; the pectoral fins being the instruments of flight, are very large, and by their means it can, when pursued by any other fish, raise itself out of the water, and support itself in the air until they become dry; but as soon as their moisture is exhausted, it drops down again into its native element.

As to the depredations carried on by the dorado against this fish, the curious observer will perceive that nature has, in an eminent degree, furnished each of them respectively with the powers of pursuit and evasion. The dorado, being above six feet long, and not thicker than a salmon, cuts its way through the water with amazing rapidity: on the other hand, the flying fish being furnished with fins longer than its body, and these being moved by a set of muscles exceedingly strong, this equality of power furnishes one of the most animated scenes which those remote seas can exhibit. The efforts of pursuit on one side, and the arts of escape on the other, present a spectacle perfectly amusing. The dorado is, on these occasions, seen darting after its prey, which will not leave the water while it can ensure its safety by swimming; but, like a hunted hare, being at last wearied, it then

has recourse to another expedient. The long fins which began to grow useless in the water, are now employed in a different manner; for, by means of these instruments, the affrighted little creature rises out of the water, and flutters over its surface for the space of two or three hundred yards, till the moisture of its finny wings is exhausted, or the muscles which moved them are enfeebled by this extraordinary mode of exertion. During this time the animal has acquired a fresh power of renewing its efforts in the water, and is capable of swimming with a considerable degree of velocity. The active and persevering enemy, however, still keeps it in view, and again drives it from the deep, till at length the poor little fish, quite wearied out, is observed to dart to shorter distances, to flutter with greater effort, and at last to drop down into the mouth of its pursuer.

The dorado, however, although one of the most formidable enemies, is not the only one that the flying fish has to dread. All the predaceous fishes that swim in the ocean, and all the birds of prey that range its surface, seem to be combined against it; for when it has escaped from its enemies of the deep, the tropic bird, and the albatross, ever upon the wing, are frequently ready to seize it. In the tropical climates these fishes, when hotly pursued, are seen springing by hundreds out of the water, and sometimes they throw themselves on board of ships, in order to escape their various assailants. We cannot, however, my dear Sir, but remark, that the all-wise and beneficent Author of Nature, in destining this fish to be exposed to the assaults of such a variety of enemies, has endowed it with double powers of escape.

To this third order of fishes belong the plaice and the flounder, the sole and the turbot, the perch and the tunny; all furnishing a delicious supply to our tables; and exhibiting, at the same time, a grand display of nature's prolific energy, and of the beneficence of the Creator, in thus amply providing for the comfortable subsistence of the human species.

To these, and a great number of others of the same

description, may be added, the surmulet, so highly valued among the Roman epicures, as we learn both from Horace and Juvenal. In this class, also, must be reckoned the mackarel, so much esteemed in the British metropolis, on account of the rich and wholesome nutriment which it affords.

THE MACKAREL,

is, when alive, a beautiful fish, and all its colours are brilliant; but their lustre fades as soon as it is drawn out of its native element. This fish furnished the precious garum of the Romans, a sort of pickle, which gave a high relish to sauces, and was likewise supposed to possess some medicinal powers. Among them, therefore, the fish that produced it was held in high estimation.

Mackarel visit the British coasts in numerous shoals during the summer season. They are easily caught with a bait; and a bit of white paper, or red rag, will answer that purpose. Although they cannot be preserved fresh in distant carriage, they furnish a supply of food to those who can have them by a ready conveyance. In Cornwall they are salted, and laid up for winter provision.

THE ABDOMINALES, OR FOURTH ORDER

of spinous fishes, have the ventral fins placed behind the pectoral, in the abdomen; and from this characteristic the appellation is derived. This division includes seventeen genera, and about 180 species.

To this numerous class belong the carp, the roach, the tench, and a variety of others, which furnish copious supplies of excellent food, among which may be numbered the anchovy, so plentiful in the Mediterranean, and, when pickled, so highly esteemed in sauces. The pike also, one of the most active and voracious of all the finny race, is comprehended in this order.

THE SALMON

is a fish that may stand in the first rank in regard to utility, and is too well known to need any description. It appears to be chiefly, or perhaps wholly confined to the northern climates, for it is unknown in the Mediterranean, although it is diffused as far north as

Greenland, and is also found on the coasts of Kamtschatka.

In Iceland and Norway, in the Baltic, at Coleraine in Ireland, at Berwick upon Tweed, at Aberdeen, and in various other places in Great Britain, stationary salmon fisheries are established; which are extremely productive, and enrich the occupiers, after paying very considerable rents to the proprietors. In some places, indeed, the salmon constitutes one of the principal resources of the inhabitants, as an article of food and commerce. The general weight of these fishes is from twenty to thirty, or sometimes even to forty pounds, although we have heard of some being caught that weighed seventy; but instances of this kind are rarely met with. About the time of spawning, the salmon becomes insipid, and loses much of its beautiful rose colour, with which its flesh is at other times tinged.

Although the salmon inhabits the ocean, it ascends the river to deposit its spawn in security, at a great distance from their efflux. These fishes are often taken in the Rhine, as high as Basle, and even ascend to the sources of the rapid rivers of Lapland.

From this short sketch of the salmon, you will, my dear Sir, easily form a conception of its importance in commerce, and of the copious supply of palatable, wholesome, and nutritious food, which it furnishes for our tables. I shall now direct your attention to another fish, inferior indeed to the salmon in regard to the quality of the aliment which it furnishes; but equal, or even superior, in regard to its commercial importance.

THE HERRING

is universally known; but although any description of its conformation, would, on that account, be totally useless, its history is exceedingly interesting. The high northern latitudes appear to be its native regions: it is there in the greatest abundance; and the frozen ocean which surrounds the pole seems to be the cradle of the species. In those navigable seas, bound up with ice the greatest part of the year, the herring and

the pilchard find a secure and peaceful retreat, equally inaccessible to man, and to their numerous enemies of the deep. In those sequestered abodes, their increase is beyond conception; and it seems that the consequent deficiency of insect food, on which they subsist, is the cause of their annual migrations. About the middle of winter the great colony sets out from the polar seas, composed of such numbers, that if all the horses in the world were loaded with herrings, they could not carry the thousandth part of them. However, they no sooner leave their peaceful abode, than they enter into a world of warfare and depredation; and numerous enemies appear to thin their squadrons. The cachalot swallows thousands in an instant; the porpoise, the grampus, the shark, and the dolphin, with the whole tribe of dog fish, suspend their mutual hostilities, and unite against the easy prey. The numerous flocks of sea fowl that inhabit the northern regions, also watch the outset of the dangerous migration, and spread destruction among their defenceless shoals.

After proceeding about as far as the northern extremity of Europe, the colony separates into two great bodies, one of which directs its course westward, and pours along the coast of America as far southward as Carolina, which seems to be the utmost limits of their progress towards that quarter. In the bay of Chesapeake, the annual inundation of herrings is so great, that they cover the shores and become a nuisance. That body which moves towards Europe, first approaches the coast of Iceland, in the beginning of March. Upon their arrival in that coast, their phalanx already considerably diminished, is still of a prodigious extent, depth, and closeness, covering an extent as large as the island itself. The whole sea seems alive to a vast distance; and imagination can scarcely conceive any limit to the numbers which cover the watery surface.

The shoal which arrives on our coasts begins to appear off the Shetland islands in April. These are the forerunners of the grand shoal, which descends in

June, and of which the arrival is also announced by the swarms of its greedy attendants, the gannet, the gull, the shark, the porpoise, and numbers besides of the same predaceous race. When the main body approaches, its extent and depth is such, as to make a visible alteration in the appearance of the ocean. It is generally divided into distinct columns of five or six miles in length, and three or four in breadth; the water curls up before them as if forced out of its bed. Sometimes the whole column sinks for the space of ten or fifteen minutes, then rises again to the surface, and in bright weather reflects a variety of resplendent colours, resembling a field bespangled with flowers of purple, golden and azure tints. On their arrival, the fishermen are ready for their reception, and, with nets made for the occasion, sometimes take two thousand barrels at one draught.

Perhaps, my dear Sir, you had not before formed any conception of the importance of the herring-fishery; and I have expatiated a little on the subject, in order to give you a comprehensive view of so interesting a portion of natural history. You will now perceive that the herring is an important article in the commercial, as well as a curious one in the natural system. The advantages that may be drawn from this small fish, are indeed incalculable, for the herring trade can be limited only by the consumption of the commodity, and the number of hands employed in the business. The article itself is absolutely inexhaustible.

THE PILCHARD

bears so great a resemblance to the herring, that it appears only to be a different species of the same fish. Its history is also as nearly as possible the same. Instead therefore of entering into any detail on the subject, I shall, my dear Sir, only offer to your attention a circumstance, which, by shewing what astonishing numbers are sometimes taken on the coast of Cornwall at one single shooting of the nets, will give you an idea of the immense profits resulting from these fisheries.

Mr. Pennant was assured by Dr. Borlase, that on the 3th of October, 1747, there was at one time enclosed, and caught in St. Anne's Bay, seven thousand hogsheads of pilchards, each hogshead containing thirty-five thousand fishes. This circumstance is well worth notice: it tends to shew the vast importance of those animals of the deep in the system of economy and commerce, to develope the vast and complicated plan of the Author of Nature, and to display his infinite wisdom and diffusive goodness, in causing both land and sea to contribute to the support of animal existence, and the comforts of human life.

As I have now been entertaining you with an important view of matters of extensive utility, I will, my dear Sir, conclude this article with an exhibition of an interesting object of curiosity. In the various departments of Nature, we see usefulness and beauty blended with endless diversity, and forming innumerable combinations.

THE GOLDEN FISH

is a native of China, but is now completely naturalized in England, where it thrives and breeds as well as if it were indigenous. These beautiful fishes were little known in this island previous to A. D. 1788, when a number of them were imported and circulated in the vicinity of London, from whence they have been disseminated into every part of the kingdom.

The gold fish grows to the length of eight inches, and in its form greatly resembles the carp. The colours vary considerably in the individuals of this species. Some are marked with fine blue, brown, or silver; but a resplendent gold colour is generally predominant; and their motions are as lively as their tints are beautiful. In China they are every where kept in porcelain vessels, for the amusement of the opulent, and as ornaments to their palaces and gardens. It is said that they will live several months in a vessel without food, provided that the water be frequently changed; but it would be cruel to make the experiment. Every kind of suffering unnecessarily

imposed in the animal creation, is shocking to humanity, and a horrid offence against the Creator.

Leaving you to reflect on the attributes of the Deity, manifested in the various animals of the watery element, I purpose, in my next, to give you a glance at a class of creatures less beautiful it is true, and by reason of our ignorance, seeming to us less interesting, but which are perhaps of not less intrinsic utility and importance in the scale of existence.

With every wish for your health, your prosperity, and your mental improvement, and with every sentiment of esteem,

I am, dear Sir,
Your's, &c.

LETTER LVIII.

"In shelly armour wrapt, the lobsters seek
Safe shelter in some bay, or winding creek;
To rocky chasms the dusky natives cleave,
Tenacious hold, nor will the dwelling leave."

OPPIAN.

DEAR SIR,

ALTHOUGH, in describing the inhabitants of the waters, a race of animals presents itself, to which, from the place of their residence, custom has given the appellation of fishes; yet some naturalists seem to doubt whether they ought to be included in that class. These are the shell-fish, which might, perhaps, with propriety, be considered as a distinct order of creatures, forming that link in the great chain of being which connects the piscine with the reptile race. They are, in fact, the reptiles of the deep; never swimming upon its surface, but creeping along the shores, and lodging at the bottom of the waters.

These animals, however, considered as fish, are distinguished into two kinds, the crustaceous and the testaceous:---the former, such as the crab and the lobster, have a shell that is not quite of a bony sub-

stance, but rather resembling a strong crust, while that of the latter is of a bony hardness.

Of this kind of animals, the lobster and the crab are the most generally known, and of the greatest utility to man, to whom they furnish an excellent article of food, wholesome and nutritious.

THE LOBSTER AND THE CRAB

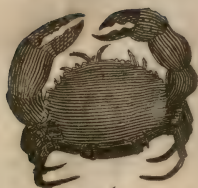
being so frequently seen in our markets, it would be useless to describe their form, and, indeed, no verbal description could exhibit an accurate representation of either. Nothing but the sight of the animal could give a just idea of so singular a conformation.

Although the lobster and the crab are exceedingly different in figure, their propensities and habits have a great similarity; both kinds annually cast their shells. After losing the old shell, and before a new one is formed, the animal is in a very uncomfortable and dangerous situation, exposed to the dog fish, and a multitude of other depredators. In this distressful situation, however, they do not continue long, for the new covering is formed, and completely hardened in little more than forty-eight hours. These creatures are extremely fierce and voracious; but it is a singular circumstance in their nature, that when they chance to lose a limb in their frequent combats, it is completely renewed in the course of about three weeks.

THE LAND CRAB

is a very singular animal: it is found in some of the warmer countries of Europe, and abounds in the tropical climates. This animal comprises a variety of species, some of which are excellent food, while others are unpalatable, and even poisonous. Some are a foot in breadth, and others not above an inch. They admit also of great variety in their colours; but the violet crab of the Caribbee islands has obtained the pre-eminence over the whole tribe.

This animal somewhat resembles two hands cut through the middle and joined together; for each side has the appearance of four fingers, and the two claws or nippers resemble the thumbs. All the rest



Crab.



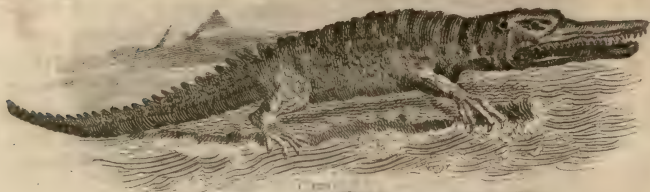
Lobster.



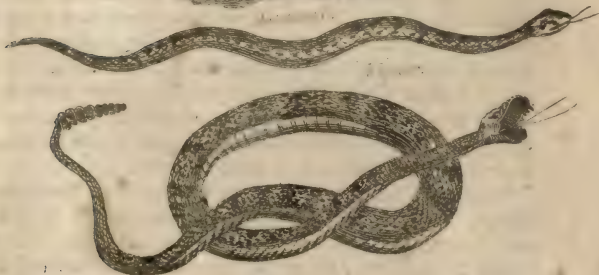
Tortoise.



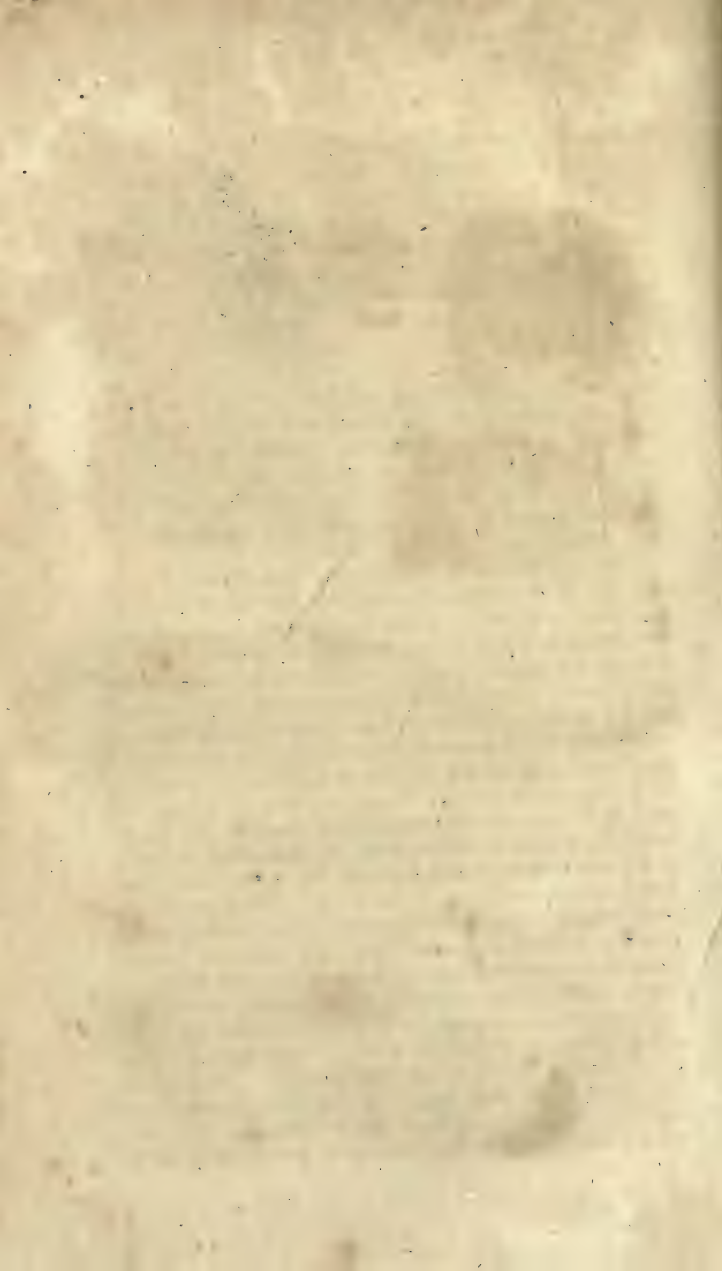
Turtle.



Snake.



Rattle Snake.



of the body is covered with a shell as thick as a man's hand, and bunched in the middle, on the fore part of which are two eyes of the form of a grain of barley, transparent as crystal, and hard as horn. A little below is the mouth, which contains two broad and sharp teeth, of an ivory whiteness, and placed not, as in other animals, crosswise, but in an opposite direction, resembling a pair of scissars. With these teeth they can easily cut leaves, fruits, and rotten wood, which constitute their usual food. This singular creature takes so firm a hold with its nippers, that it will lose its limb rather than its grasp; and it is often seen scampering away after leaving its claw still holding fast to its enemy. In fact, the loss of a leg or an arm, is a trifling matter to the land crab; for a new one soon grows in its place, and the animal is as perfect as before.

This circumstance, however extraordinary it may appear, is not the most wonderful part of the history of these singular creatures. They reside in the mountainous parts of the country, where they live in a kind of regulated society, in this respect resembling the beaver. From these inland recesses they descend once a year in regular bodies, containing millions at a time, for the purpose of depositing their spawn upon the shore. As they multiply in astonishing numbers, they choose the month of April or May for commencing their expedition, when they issue by thousands from the trunks of hollow trees, or the clefts of rocks, and pursue their march with all the order and regularity of the best disciplined army. They generally form themselves into three columns, and hold a direct course, without ever suffering any obstacles to impede their journey, except such as are absolutely insurmountable; and it is only when steep precipices, or large rivers, oppose their progress, that they are obliged to turn out of their way, and regulate their route by the situation of the country. They generally halt in the day, and in the evening resume their march. As soon as they arrive at the coast, the whole body crawls into the sea, where they all re-

main for some minutes to let the waves pass over their shells. After this they leave the margin of the ocean, in search of some retired situation on land, where they remain a few days, and again return to the sea shore, where they deposit their spawn, the greatest part of which is devoured by different fish, while the eggs that escape are hatched under the sand.

The strength of the old ones being by this time almost exhausted, they make holes in the ground, in which they hide themselves while they cast their shells, remaining for five or six days in a state of torpidity. During that period they grow very fat, and are then in the highest perfection. In some countries the slaves are entirely fed with them; and by many people they are considered as delicious food. The whole time of performing their expedition, from the moment of their outset to that of their return to their inland retreats, is sometimes not more than six or seven weeks; but when great obstacles impede their march, it often requires more than three months.

CRUSTACEOUS FISHES OF THE TORTOISE KIND, form also a curious subject of natural history. Animals of this nature are divided into two classes, one residing on land and the other in the water; and in this respect they resemble the crab genus. The two species are distinguished by the names of the tortoise and the turtle, the former being an inhabitant of the land, and the other of the sea. In their internal conformation they bear a strong resemblance to each other, but they differ very much in size.

The land tortoise is found from one to four or five feet in length, and from five to eighteen inches across the back. The head, which it can, at pleasure, protend beyond, or draw within the shell, resembles that of the serpent kind. The tail is long and scaly, and the exterior covering of the animal is composed of several pieces of shell joined together in the firmest and most compact manner, and somewhat resembling the tiling of a house.

This animal, which is of the most pacific disposi-

tion, is admirably armed for defence. It is also remarkable for longevity; and although it is difficult to ascertain the precise duration of its life, there is a well authenticated instance recorded of one kept in the gardens of Lambeth Palace, which was known to have lived above a hundred and twenty years. The tortoise is, indeed, so tenacious of life, that it cannot, without difficulty, be destroyed: it even, in some measure, seems calculated for immortality; for it is said that it retains the vital principle a considerable time after the loss of its brain, and even of its head. Experiments, shocking to humanity, have sometimes been made, in order to see how far this animal is capable of enduring pain; but I flatter myself, my dear Sir, that you will agree with me, that all knowledge gained by so flagrant an offence against the Creator of the universe, as this infliction of torments on his unoffending creatures, had better remain for ever concealed.

THE SEA TURTLE

comprehends a variety of species, some of which are neither palatable nor wholesome; while others are celebrated in the annals of epicurism. Of the former class is the great turtle of the Mediterranean, which is the largest of the whole race, but its flesh is coarse and unwholesome. One species called the hawksbill, is valued for its shell, of which all our tortoise-shell snuff boxes, and other trinkets, are made. The green turtle is that which is held in such high esteem for the table. This, indeed, is both a wholesome and an exquisitely delicious food, and also a valuable article of commerce; for our ships are now generally furnished with conveniences for importing this animal alive from the West-Indies. It is said, however, that the flesh of the turtle has the full perfection of its flavor no where but on its native shores.

A common green turtle weighs about two hundred weight, and some have been found that weighed above eight hundred. This animal seldom quits the sea, except to deposit its eggs, which, in about twenty-five days, are hatched by the heat of the sun. The

young ones, as soon as they burst from the sand, directed by instinct, run immediately towards the sea, which Providence has designed for their abode. Turtles have sometimes, although seldom, been caught on the British shores.

TESTACEOUS FISHES

admit of so great a diversity both in the form and colour of their shells, that the study of them has been the principal employment of the lives of some naturalists; and collections of them have been made at an expence difficult to estimate, or even to conceive.

Of the bivalvular kind, the oyster is the most estimable, both as excellent and nutritious food, and as a valuable article of commerce. A species of these, called rock oysters, are frequently seen as large as a plate; and those which are caught on the coast of Coromandel, are said to be of so great a size, that one of them will serve several men for a meal; but they have not so delicate a flavor as those of the smaller kinds.

All oysters, and many other shell fish, are known sometimes to contain pearls; but that which particularly obtains the name of the pearl oyster, has a large, strong, whitish shell, rough and hard on the outside, but smooth and polished within. From this is taken the substance called mother-of-pearl, of which so many beautiful trinkets are made. This is nothing more than the internal coats of the shell, which resemble the pearl in colour and consistence. There are many pearl fisheries in Asia and America; but the principal are those in the Persian Gulf. The pearls there produced are the most beautiful, and consequently fetches the highest prices.

The pearl fishery is one of the most destructive employments in which any of the human species can be occupied. It is said that the best divers will continue three quarters of an hour under water, but many find that fifteen minutes quite exhaust their strength. Every diver descends perfectly naked, except a net fastened to his neck, for the purpose of containing the oysters, and is let down by a rope, with a stone of

forty or fifty pounds weight fastened to it to keep him down to the bottom.

The wretched people who attend those fisheries are generally slaves, and are mostly cut off in the prime of life; for the pressure of the air upon the lungs at the bottom of the water, is too great for the human frame to sustain; and a consumption is almost always the consequence. Thus an insignificant glittering gem is obtained at the expence of a number of human lives.

Shell fish of the multivalve kind are too numerous to admit of investigation in this place; and of so many various species, that a naturalist would be baffled to make a judicious selection. Every one is an object of curiosity; all of them claim the diversity of nature's works, and the wonders of creative wisdom.

I shall now, my dear Sir, leave you to reflect on the immense variety displayed in those numerous tribes, and beg leave to assure you, that, with unfeigned affection,

I am, dear Sir,

Yours, &c.

LETTER LIX.

"Some say the lark and loathed toad change eyes."

SHAKSPEARE.

"Like a fall'n cedar, far diffus'd his train,
Cas'd in green scales, the crocodile extends."

THOMSON.

DEAR SIR,

I SHALL now give you a glance at a race not less numerous, and scarcely less various, than that on which I last treated. This is the reptile race, of which the almost innumerable tribes may be comprehended under the frog, toad, lizard, and serpent kinds. However uninteresting many of these may appear, or however disgusting their figure may seem

to fastidious delicacy, the great Author of Nature has undoubtedly created them for a wise and good purpose. We are too little acquainted with their habits, propensities, and general economy, to be fully able to estimate their utility; but their importance in the scale of being is well known to him who has made nothing in vain.

The frog and the toad are universally known; and the frequent opportunities which every one has of viewing them, preclude the necessity of description. Their history, however, is sufficiently curious, if the conciseness of our plan would admit of minute investigation.

In their figure, these two animals have a considerable resemblance, but custom and prejudice have taught us to make a very different estimate of their properties: the first is considered as perfectly harmless, while the latter is supposed to be poisonous. In this respect, the toad has been treated with great injustice. It is a torpid harmless animal, that passes the greatest part of the winter in sleep.

The erroneous opinion of toads containing and ejecting poison, has caused many cruelties to be exercised upon this harmless, and undoubtedly useful tribe. Toads have been inhumanly treated, merely because they are ugly; and frogs have been abused because they are like them. But, my dear Sir, we are to observe, that our ideas of beauty and deformity, of which some arise from natural antipathies implanted in us for wise and good purposes, and others from custom and caprice, are of a relative nature, and peculiar to ourselves. None of these relative distinctions of great and small, beautiful or ugly, exist in the all-comprising view of the Creator of the universe: in his eyes the toad is as pleasing an object as the canary-bird or the bull-finch.

THE CROCODILE

is one of the most terrible and mischievous animals, not only of the lizard kind, but also of all those which nature has produced; fortunately for us, however, it is placed at a happy distance from Europe, and only

confined to those regions where men are scarce, and the art of civilization in a great measure unknown.

To observe this formidable creature vested with all its natural terrors, grown to an enormous size, and propagated in surprising numbers, we must visit the uninhabited regions of Africa and America. In those vast rivers, which roll through extensive and desolate countries, where cultivation and commerce have never exerted their beneficial influence, and the most powerful and ferocious animals exercise their strength and rapacity uncontrolled by man, the crocodile reigns in perfect security, terrible to every living creature that enters the water, or approaches its margin.

Although this animal admits of several varieties, of which the crocodile, properly so called, and the cayman, or alligator, appear to be the principal; yet these distinctions seem to be made rather by travellers than by nature. The crocodile is, by them, confined chiefly to the old, and the alligator to the new continent; but the distinction of form and colour is very trifling. All the animals of this tribe agree in strength, size, and ferocity, and are justly considered as objects of terror wherever they are found.

Of this ferocious and formidable creature so often mentioned by travellers, you will, my dear Sir, probably expect a description.

The crocodile frequently grows to the size of twenty feet in length, and five feet in circumference. Some, it is said, have been found of the length of thirty feet. The fore legs have the same parts and conformation as that of a man, each paw having five fingers. The hind legs, including the thigh and the foot, are about two feet two inches long. The hind paw is about nine inches long, divided into four toes, united by a membrane or web, like those of a duck, and armed with large claws. The head is long and flat, and the eyes are very small. You will, my dear Sir, observe, that the dimensions here given, are taken from one of these animals which was dissected by the Jesuits at Siam, and which was not one of the very largest size, as its whole length did not exceed

eighteen feet, and yet its jaws opened to the terrible width of fifteen inches and a half; so that it was completely able to swallow a man. The Jesuits, by this dissection, made the important discovery, that the accounts we often hear of the crocodile being unable to turn itself readily, or to pursue its prey otherwise than by a direct course, are not to be depended on for their accuracy; for they found no less than sixty-two joints in the back-bone, which, though very closely united, seemed to have sufficient play to enable the animal to bend like a bow to either side, and consequently to wheel round without any great difficulty. The skin is defended by a suit of armour, composed of large scales, disposed like parallel girdles, and almost impenetrable to a musket ball, so that the belly is the most vulnerable part. The general colour of the crocodile is a dark ash-coloured brown on the upper part, and a whitish citron on the belly; the sides being speckled with large spots of both these colours.

Such is the figure and conformation of this terrible animal, which, under the name of the crocodile, or the alligator, abounds in the Nile, the Niger, the Ganges, and other great rivers of Africa, and the warmer parts of Asia and America. In upper Egypt, and in the Niger, they are extremely destructive, lying in wait whole hours, and even days, at the edge of the water, quite motionless, resembling the trunk of an old tree, until some animal come to drink.

This formidable creature spares neither man, nor the fiercest quadruped that comes within its reach. It seizes its victim with a spring, and instantly drags it into the water, and if the captive happen to escape, it pursues with greater celerity than might be expected from its conformation. The strength of the crocodile is amazingly great, and, as its scaly coat of mail is impenetrable; its offensive arms are irresistible; and escape, rather than contest, can alone afford security against its attacks.

Frequent combats happen between this creature and the tyger, one of the fiercest and most terrible of all quadrupeds. Tygers frequently go down to the

rivers to drink, and, upon these occasions, the crocodile, if near, never fails to seize them. The ferocious beast, however, seldom falls unrevenged; for the instant he finds himself seized, he turns with great agility and fierceness on his enemy, and endeavours to strike his claws into the crocodile's eyes, while the latter drags him into the water, where they continue to struggle until the tyger be drowned, and his triumphant antagonist feasts upon his carcase. Notwithstanding the formidable teeth and claws of the crocodile, its tail is an instrument of destruction scarcely less formidable; for with a single stroke of it this animal has frequently been known to overturn a canoe, and then devour the poor savage, its conductor.

THE SALAMANDER

is an animal of the lizard kind, concerning which a number of fables have been invented, and propagated from age to age, and from country to country. The ancients have described it as engendered by heat, living in flames, and feeding on fire as its proper nutriment. This fictitious picture of an animal that never existed, has vanished before modern investigation, and the salamander, divested of its fabulous properties, is found to be no more than a particular kind of lizard, about seven or eight inches long, and generally of a black colour, spotted with yellow. When touched, it feels extremely cold to the hand; and it is not improbable that this circumstance may have contributed somewhat to the fabulous descriptions of which it has been the subject. When thrown into the fire it bursts, and by ejecting its fluids, may seem to have power in regard to extinguishing a small flame; but it immediately loses its life, and consequently the experiment must be condemned as a reproach to humanity.

In forming an idea of the figure of a salamander, we ought to suppose the tail of a lizard joined to the body of a frog, and then we shall not be far short of precision. It differs also from the rest of the lizard

kind, in being viviparous, whereas all the others are oviparous.

THE CHAMELEON

is an animal of which the head is about two, the body four, and the tail five inches long. In form, it not a little resembles the crocodile; but the thickness of its body varies considerably at different times, as it possesses the faculty of blowing itself up from one inch to two in depth; and this power of inflation and contraction is not confined to the body, but also extends to the legs and the tail.

The colour of this animal is its most remarkable peculiarity. The salamander has not been a more distinguished subject of ignorant misrepresentation, than the chameleon has been of philosophical enquiry. The surface of its skin is unequal, but soft; and when the creature is at rest in the shade, the eminences appear of a blueish grey, and the intermediate spaces of a pale red and yellow. When viewed in different lights, it assumes every tint that can possibly be imagined; and no two spectators could ever agree concerning its true colour. From this circumstance it derives its celebrity, and on this account has, in all ages, been introduced by moral writers as the emblem of a fickle and inconstant mind.

There are several species of lizards in Great Britain; that which is the most common is the eft, in some provinces called the newt, and in others the askar. The same prejudices are entertained against this animal as against the toad; but both are equally inoffensive; and however disgusting their figure may appear to us, the all-wise Creator has undoubtedly, for some wise and good purpose, given them a place in the system of animated nature.

I am, most respectfully,

Dear Sir,

Your's, &c.

LETTER LX.

"Lo! the green serpent, from his dark abode,
 Which ev'n imagination fears to tread;
 At noon forth issuing, gathers up his train
 In orbs immense;

 with threatening tongue
 And deathful jaws erect, the monster curls
 His flaming crest."

THOMSON.

DEAR SIR,

AFTER continuing our range for so long a time among the various tribes of animal life, we now come to a class, which, above all others, has excited terror in man, as well as in almost every other creature. This is the serpent race, of which the view always excites sensations of horror.

The distinguishing characteristic of serpents are, that they breathe through the mouth, and have neither legs, ears, nor fins. The serpent tribe are not in any of the European countries sufficiently numerous or formidable to be truly objects of terror. There are not above three or four kinds that are dangerous, and the poison of all operates in the same manner. A burning pain, easily removed by timely application, is the worst consequence that is to be apprehended from the bite of any of the serpents of this quarter of the globe. However, although Europe be happily delivered from these dangerous reptiles, in the tropical regions where the climate is sultry, the forests thick, and the inhabitants few in number, serpents multiply in proportion. Along the swampy banks of the great rivers of Africa and America, particularly the Niger and Oroonoko, they are seen clinging in amazing numbers to the branches of trees; and in those parts they carry on unceasing hostilities against all the other animals in their vicinity. In those warm and fertile countries, the serpent tribes

grow to an enormous size, and are objects of terror rather than that of curiosity.

THE BOA, OR LIBOYA,

of the torrid zone, is frequently found in the island of Java, and several other parts of the East-Indies; as also in Brasil, and some other countries of South America.

This enormous reptile, which includes several species, all of them terrible from their magnitude and strength, but destitute of venom, is generally of thirty feet long, and of a proportionable thickness: its colour is of a dusky white, variously spotted. The scales are round, small, and smooth.

These formidable serpents lie hid in thickets, whence they sally out unawares, and, raising themselves upright on their tails, attack both man and every animal without distinction. In a letter printed in the German Ephemerides, we have an account of the seizure of a buffalo by one of these enormous reptiles. The serpent had been waiting some time near the brink of a pool, in expectation of its prey, when a buffalo was the first victim that presented itself. Having darted upon the animal, it instantly began to wrap round it with its voluminous twistings; and at every twist the bones of the buffalo were heard to crack. The poor animal struggled and bellowed; but its terrible enemy encircled it too closely to suffer it to get free, till at length all its bones being crushed to pieces, and the whole body reduced to an uniform mass, the serpent untwined its folds in order to swallow it at leisure. To prepare for this, it was seen to lick the body all over, and thus cover it with its mucus, to make it slip down more readily. It then began to swallow the buffalo; and its body dilating itself to receive it, the monstrous serpent took it in at one morsel, a creature three times as thick as itself. These terrible reptiles are sometimes found with the body of a stag in their gullet, and the horns, which they are not able to swallow, sticking out of their mouth. When the serpent has thus swallowed a stag, a tyger, or any other large animal, it is for

some time unable to move for repletion, and may then be without danger approached and destroyed. Leguat assures us, that in Java, he saw one of these serpents that was fifty feet long. Carli mentions their growing to the length of forty feet, and these accounts are corroborated by the concurrent testimony of travellers.

THE RATTLE SNAKE

is a native of the American continent. It is sometimes found as thick as a man's leg, and more than six feet in length. It resembles the viper in the shape of its head and neck, as well as in its colors. This dreadfully poisonous reptile, however, is chiefly distinguished for the fatality of its bite and the rattle in its tail, with which it makes a loud noise on the least motion.

This instrument appears to have been given it by the wise and gracious Providence of the author of nature, for the purpose of warning other creatures of its approach, and thus giving them an opportunity of avoiding the danger. In effect, no sooner does the rattle begin its harsh and alarming sound, than all the other tribes of animated nature testify their fear by a precipitate retreat; and the universal terror which this dangerous serpent inspires, creates a solitude around its haunts. This rattle is composed of several thin, hard, and hollow bones, linked together. It has generally been supposed that the serpent acquires every year an additional bone; and this opinion appears probable, from the circumstance of the young being wholly destitute of this appendage.

For the bite of this animal various antidotes have been recommended; but whether any of them can be depended on, appears somewhat doubtful. Some few instances have occurred of persons who have recovered, but whether this was owing to vigor of constitution, the slightness of the wound, the power of medicines, or the combination of all these, in concurrence perhaps with a variety of other adventitious circumstances, seems difficult to decide. It is certain that cases of recovery are rare; for such is the extreme

malignity of the venom, that the pain soon grows insupportable. Some have expired under it in five or six hours; and those whose vigor of constitution enables them to survive a little longer, are usually carried off by a mortification, which rapidly diffuses itself through the whole frame.

Of the serpent kind there are a great number and variety of species, which it would at this time be tedious to describe, and useless to enumerate. The only species of the venomous kind which is with certainty known to exist in Great Britain is the viper. The common snake, the largest of British serpents, is perfectly innoxious. It feeds on insects, worms, and mice, and deposits its eggs very frequently in dung-hills, where the natural heat promotes the exclusion of the young; or in dry sandy banks, where the heat of the sun answers the same purpose.

The slow, or blind worm, is the smallest of the serpent race that is found in this country, and, like the snake is perfectly harmless.

I cannot, my dear Sir, conclude this article without some general remarks on certain properties which are perhaps peculiar to the serpent tribe. From the width of their mouths, the conformation of their jaws, and the yielding texture of their whole bodies, serpents are capable of swallowing animals much more bulky than themselves. It is, however, not a little remarkable, that although they are voracious to excess, and although the liboya, the largest of the race, will swallow without chewing a larger morsel than the whale itself can take in, no other animal whatever can so long support abstinence.

The long forked tongue of the serpent has sometimes been supposed to be the instrument with which it inflicts the poisonous wound; but this weapon is perfectly harmless, and is, indeed, too soft to make any puncture. The poison lodges in a bag under the teeth, and is communicated by the bite. It is, however, a happy circumstance, that none of the venomous race ever attack mankind. The rattle-snake itself

never becomes the assailant, and only acts on the defensive, when trodden upon or attacked.

I have now, my dear Sir, given you a view of an order of animals different from all others in their conformation; and, by a peculiar mechanism, exhibiting a new and singular display of the wonderful works of the Creator of the universe. Without either legs, wings, or fins, they are notwithstanding locomotive, and tolerably swift in their movements. The want of feet is wonderfully compensated by the disposition of the muscles and fibres of their bodies, and shews that the author of nature has a multiplicity of means for accomplishing every purpose.

You may perhaps be inclined to doubt the utility of the serpent race, but you must, my dear Sir, remember that we, who only see by parts, cannot comprehend the whole complicated plan of infinite wisdom. We can discover the use of many of the reptile race, and serpents, no doubt, have a part assigned them to act in the general system for the purpose of contributing to its perfection. In regard to their formidable qualities, they are rather terrific than hurtful to the human species. Not a tenth part of them are venomous, and, these, as already observed, act only on the defensive. Their figure excites horror and disgust, and this antipathy against the serpent, and most of the reptile race, has undoubtedly been implanted in our nature, in order to secure us from the danger of rashly approaching the noxious, which we may not always be able to distinguish from the harmless kinds. With every sentiment of affection and esteem, I am,

Dear Sir,

Your's, &c.

LETTER LXI.

“ ——— Each crawling insect holds a rank
 Important in the plan of Him who fram'd
 This scale of beings; holds a rank, which lost
 Would break the chain, and leave a gap,
 That Nature's self would rue.”

DEAR SIR,

BY a gradual progress in our survey of animated nature, we are at last come to a part which can never be fully investigated. The different species of insects are too numerous, and many of them too much concealed from our view, to permit us to be acquainted with their history. The larger and more conspicuous objects of creation whether animate or inanimate, admit of obvious distinctions; but when we descend to the inferior classes and more minute parts of the animal and vegetable kingdoms, the variety multiplies so fast as to preclude all possibility of describing in detail.

Buffon divides the whole tribe of insects into four classes, and Linnæus into seven, of which, as I know the value of your time and the importance of your studies, I shall not trouble you with the enumeration. I shall therefore only mention two or three species, which are particularly interesting to man, on account of the inconveniencies or benefits of which they are productive, or from being frequently alluded to by ancient writers.

THE SCORPION

is an insect of this description, and is frequently mentioned in the scripture but scarcely ever without being associated with misrepresentations of malevolence and mischief. Among all the insect tribe, the scorpion, indeed, is the most-terrible; its figure is hideous, and its sting generally fatal. This creature, which, of all the insects without wings, is the largest as well as the most formidable, somewhat resembles a lobster in shape, although beyond comparison more

horrible. Of this dangerous insect nine different species have been enumerated, and all of them remarkable for their malignity. Indeed there are few animals more dreadfully mischievous than the scorpion. As it frequently takes refuge in houses, it is found to be a dangerous inmate, and often stings those among whom it resides.

The malevolent disposition of the Scorpion has been proved by a number of experiments which shew that no animal in creation is endued with so irascible a nature. Its fierceness is dangerous not only to all other creatures that approach it, but also to its own species; for scorpions are the most cruel enemies to one another, which is a happy means of preventing the too great increase of their numbers, as whenever two of them meet, a combat immediately commences, and they never cease fighting till one of them be destroyed. Maupertius put a hundred of them together in a vessel, and they scarcely came into contact before they began to exert their rage in mutual destruction. Nothing was to be seen but universal carnage; and in a few days there remained only fourteen which had killed and devoured all the rest. He also enclosed in a glass vessel a female scorpion big with young, and she was observed to devour them as soon as they were brought forth: only one of the number escaped the general destruction by taking refuge on the back of the old one; and this parricidal offspring of an unnatural mother soon avenged the cause of its brethren by killing its cruel parent. These observations demonstrate the propriety of the scriptural metaphors, which exhibit the scorpion as the lively emblem of finished malignity.

THE SILK-WORM

is as beneficial as the scorpion is noxious, and produces an article of ornament and commerce universally known and admired. This insect is of the caterpillar genus, of a whitish colour, with twelve feet, and at last produces a butterfly of the moth kind. It is a native of China and the easternmost parts of Asia, and has been gradually introduced into various parts

of the world. Silk was anciently brought in small quantities to Rome; but it was so scarce as to be sold there for its weight in gold.

As the silk-worm has but a short time to live, it makes use of every moment, and is almost constantly spinning, except at those intervals, when it changes its skin. The cone or ball of silk in which it envelops itself, and which nature has taught it to form with such exquisite art, is spun from two little longish bags, placed above the intestines, and filled with a gummy fluid of a marigold colour. This is the substance of which the threads are formed; and the little animal is furnished with a wonderful apparatus for spinning it out to the degree of fineness, which its occasions may require. This instrument in some measure resembles a wire-drawer's machine, in which gold or silver threads are drawn to any degree of minuteness. The whole length of thread composing one of the cones will, if measured, be found to be about three hundred yards, and it is so very fine that eight or ten threads are generally rolled off into one by the manufacturers. The cone appears to be of the size of a pigeon's egg. When this is completed and the worm appears ready to burst out, the manufacturers generally take care to kill the aurelia, by exposing it either to the sun or to an artificial heat; because its bursting through the cone destroys, or at least exceedingly damages the silk. This being done, they throw the cones into warm water, and stir them about until the commencement of the first thread furnishes them a clue for winding. They generally take eight of the silken threads together, the cones being still kept in water till a proper quantity be wound off, but they do not take all, as the last parts grow weak and are of a bad colour. At the last a paper-like substance remains, which some stain with a variety of colours for the purpose of making artificial flowers, and others let lie in the water till the glutinous matter which cements be dissolved: it is then carded like wool, spun with a wheel, and converted into silk stuffs of an inferior kind.

I have here, my dear Sir, given you a slight view of the history of the silk-worm, its operations and valuable productions. This glance, however, is sufficient to make you regard it as a singular phænomenon of Nature and Providence, exhibiting in a wonderful manner the wisdom and goodness of the Creator in the various operations of animal instinct, and the exertions of human ingenuity forming those relations which enable man to derive the most important benefits. The subject would, indeed, have admitted of a more detailed description; but this will suffice to give you a general and tolerably just idea of this extraordinary insect, so distinguished in the history of commerce and fashion.

THE BEE

is, of all the classes of winged insects, the most beneficial to man, and certainly one of the most wonderful. Bees are common in most countries; but although naturalists have for ages considered them as an important subject of enquiry; and large volumes have been written in order to elucidate their history, it is yet but imperfectly known.

In some countries bees are an object of great attention to the peasant, and their honey and wax are considerable articles of trade. In many of the forests of Russia and Poland, holes are made in the trunks of trees for the reception of bees, which abound in those parts. By this method the country people obtain a great quantity of honey and wax, and derive no small profit from those valuable commodities.

“Here their delicious task the fervent bees
In swarming millions tend: around, athwart,
Thro’ the swift air the busy nations fly,
Cling to the bud, and with inserted tube,
Suck its pure essence, its ethereal soul.
And oft with bolder wing, they soaring dare
The purple heath, or where the wild thyme grows,
And yellow load them with the luscious spoils.”

Instead of entering into any particulars on so copious a subject, which might afford matter of almost endless

investigation, I shall only in general terms observe, that in contemplating the commonwealth of bees, and viewing the exactness of their police, the regularity of their civil and domestic œconomy, the activity and assiduity of their industrious exertions, and, above all, the geometrical exactness with which they fabricate the honey-comb, and construct their cells, scepticism itself can scarcely avoid discovering the agency of an Almighty hand in directing their various and wonderful operations.

Among the innumerable tribes of insects that swarm in the earth and the air, I shall only mention one more in particular, which, from its being so frequently the subject of scriptural allusion, I cannot entirely omit. This is the locust, of which the sacred writings give such terrific descriptions.

The scriptures being written in a country where the locusts made a distinguished figure in the picture of nature, have exhibited striking views of multitudinous numbers, and dreadful rapacity. In the Old Testament, an invading army, whose multitudes appear innumerable, and every where carry terror and desolation, is generally compared to a swarm of locusts; and these destructive insects are often represented as the instruments of Divine vengeance.

This winged insect, of which their devastating voracity has in many countries been too often experienced, is a larger species of the grasshopper genus. It is about three inches long, and has two horns or feelers of about one inch. The head and horns are of a brownish colour: it is blue about the mouth, and on the inside of the larger legs. The shield that covers the back is greenish; the upper side of the body brown, spotted with black, and the underside purple. The upper wings are of a dusky brown, the under wings of a lighter brown, and tinged with green, and more transparent, with a cloud of dark spots near the tips. No animal in the creation multiplies so rapidly as these in a warm climate and a dry soil; for there its eggs are safely deposited, and speedily hatched by the heat of the sun.

When the locusts make their destructive invasions, they appear at a distance like a black cloud gathering in the horizon, which, as it approaches, almost hides the face of day. Sometimes the husbandman sees this imminent danger pass over his head without doing him any mischief; and the whole swarm proceeds forward to settle upon some less fortunate country; and wretched is the place where they alight. Every trace of vegetation immediately disappears; the visitation of a few minutes destroys the expectations of a year; every thing that grows is immediately devoured, and nothing but barren desolation left behind them. But if they be noxious when living, they are still more so when dead; for wherever they die, they infect the air in such a manner that the smell is insupportable.

These desolating insects are seldom seen in England; although in the year 1748, a few of them made their appearance here, from which dreadful consequences were apprehended; but happily they were not followed by any numerous swarms. The annals, however, of most countries, are marked with the devastations made by their devouring multitudes; and although they do not visit Europe in such destructive swarms as formerly, yet, in some of the southern countries they are still formidable. Those which at uncertain intervals have visited this quarter of the globe, are generally supposed to have come from Africa.

In several countries the inhabitants turn this pest in some measure to their advantage. Locusts are eaten by the natives in many of the eastern countries, being caught in small nets provided for that purpose. They parch them over the fire in an earthen pan, and when their legs and wings are fallen off, they turn reddish like boiled shrimps. Dampier, who had eaten them thus prepared, describes them as a tolerable dish. They appear to have constituted a considerable article of food among the ancient anchorites; and John the Baptist is represented as living, in a great measure, on locusts and wild honey. Such is the history of this destructive insect, which, in scriptural lan-

guage, is so frequently made the emblem of invading armies, and of extensive desolation.

The hydra, or fresh water polypus, which was first noticed by Mr. Tremblay, A. D. 1741, may serve, my dear Sir, to give you a general idea of zoophytes; an order of compound animals furnished with a kind of flowers, and having a vegetable root and stem. This order, which naturalists have divided into fifteen genera, seems to form that link in the chain of being which connects the animal and vegetable kingdoms.

The hydra was at first considered as a mere plant; but it was soon discovered to be a sensitive being, and yet capable of propagation by slips. Of this genus various species are found in different situations, in ditches and pools of stagnant water; but all of them possess the property of reproduction in whatever manner they are divided. If cut into three parts, each puts out a head from one, and a tail from the other, so as to become three distinct animals, all performing the functions of their species, and exhibiting perfect copies of their original. Although the different genera and species of insects which our eyes can discover, are, as already observed, numerous beyond calculation; and in their formation, their colours, and their habits, various beyond all that fancy itself could conceive, yet there are multitudes of others which cannot be perceived without the aid of the microscope. There is also not the least reason to doubt but there are gradations of existence below the smallest animalcules, which our nicest instruments have not brought to light. We have already been able to discover myriads of living creatures in the least drop of the purest water; and it seems to be a rational presumption to infer, that he who has filled the immensity of space with habitable matter, with suns and worlds innumerable, has also peopled every part of that matter with appropriate inhabitants, although too minute to be perceived by any apparatus yet invented. The supposition is not unworthy of the Creator of the Universe, and all the analogies

that can be drawn from our observations of the system of nature render it probable.

"Full nature swarms with life one wond'rous mass
Of animals or atoms organized
Waiting the vital breath, when parent heaven
Shall bid his spirit blow.

.....

.....

..... Nor is the stream
Of purest crystal, nor the lucid airs
Tho' one transparent vacancy it seem,
Void of their unseen people. These conceal'd
By the kind art of forming heaven, escape
The grosser eye of man."

THOMSON.

With unfeigned esteem and affection,

I am, dear Sir,

Your's, &c.

LETTER LXII.

"Hail! source of Being! universal soul
Of heaven and earth! Essential presence hail!
To thee I bend the knee: to thee my thoughts
Continual climb: who with a master-hand
Hast the great whole into perfection touch'd!"

THOMSON.

DEAR SIR,

WE are now come to the conclusion of our survey of the wondrous works of the Deity displayed in the stupendous system of nature; and I am fully persuaded that you, as well as myself, will reluctantly take leave of so beautiful, so variegated, and so magnificent a view. At the close of our excursions, however, let us not have to reproach ourselves with having uselessly rambled through the immense fields of creation. The object of all physical research ought to be moral and intellectual improvement; and indeed the study of nature, exalting our admiration, is peculiarly adapted to enflame our love for the architect of

the universe, the self-existent author of all existence. Our love of the Creator, cannot, however, be more appropriately displayed than by the exercise of universal benevolence towards his creatures. This important moral truth I have every where endeavoured to inculcate; and let it, my dear Sir, be impressed on your mind, and kept in your memory, that

“——— the poor beetle that we tread upon
In corporal suffering feels a pang as great
As when a giant dies.”

This effusion of poetry speaks no other language than that of accurate philosophy; for there is every reason to believe that the sensations of many of the most diminutive insects are as exquisite, and consequently, their sufferings as acute as those of larger animals. The writhings of the poor worm, on which we accidentally tread, evidently shew the pangs which it feels, shock the heart that is endowed with sensibility and force it to lament the step which fortuitously caused these sufferings. Horrible, however, to relate, parents too frequently indulge their children in the wanton sport of torturing poor insects in a manner at which humanity must shudder,

“What more advance can mortals make in sin,
So near perfection who with blood begin?”

DRYDEN.

The supreme court of judicature at Athens, to its eternal credit, punished a boy for putting out the eyes of a poor bird that unfortunately fell into his savage hands; and parents and masters should never overlook an act of cruelty towards any thing that is endowed with life and sensation, however mean and contemptible it may seem. No creature is mean or insignificant in the eyes of the universal Parent, the Creator of all beings:

“With him no high nor low, no great nor small,
He fills, he bounds, connects and equals all.”

Yes, my dear Sir, great and little, important and mean, are relative terms, and distinctions of our own,

which have no existence in the all-comprising view of the Creator and governor of the universe.

The consideration that all the felicity of animals is confined to the short period of the present life, without any hope or compensation in a future state of existence, ought to be an additional inducement to treat them with compassion. We ought to imagine every inoffensive animal which our wanton cruelty would deprive of existence, addressing us in the mouse's affecting petition :

“But if this transient gleam of light
Be all of life we share,
Let pity plead within thy breast,
This little all to spare.”

These moral sentiments, so strongly inculcated by reason, are decidedly corroborated by religion, sanctified by scripture, and impressed by the discourses of Him from whom all scripture derives its authority, and all true religion its origin. The Redeemer of mankind reminds us that his Heavenly Father takes care to feed the ravens, and that the sparrows are not overlooked in the universality of his providence ; which is sufficient to convince us that we cannot, without offering a gross insult to the Creator and Sovereign of the world wantonly ill-treat any of his creatures, all of which are objects of his parental solicitude.

In the system of nature, it is ordained by an arrangement, for which you will recollect the reasons already assigned, that animals should be conducive to the support of one another, and that all of them should be subservient to the interests of man, or at least subject to his reasonable will, although not to his wanton cruelty. When, therefore, we are obliged to kill any of them for our food, or to destroy for our safety such as are noxious, we ought to dispatch them expeditiously, and to render the pang of death as short and easy as possible.

In contemplating the immensity of the universe and the regularity of its architecture, we have observed the ponderous magnitude and uniform motions

of the celestial bodies; and cannot but easily perceive that nothing less than Divine power could have created and suspended in the regions of infinite space, those massy orbs, and that Divine Wisdom alone could have regulated their courses. In descending to the earth we have clearly discovered the same traces of an Almighty hand. We have seen his glory exhibited in the variegated scenes of vegetation, in the colouring and structure of trees, herbs and flowers, and his beneficence displayed in their extensive utility. From thence proceeding to a view of animated nature, wonders still burst upon our eyes. In the formation of the different animal beings which brouze the herb or range the forest, which flutter in the air, or swim in the ocean, we see a perfect adaptation to the circumstances of their existence. The feathered clothing of the birds, the hair of beasts, the scaly covering of fishes, are all admirably suited to the element in which each order is placed. Their instincts, also, exactly correspond with their destination, and operate in a similar manner in every individual of the same species. Every owl and every cat has a natural propensity to catch mice; every bee has a talent for making honey, and every silk-worm possesses the art of spinning silk. All the birds of the same kind build their nests in the same manner; and every animal of the same species, if left in its natural state, chuses the same kind of food. This uniformity of instinct in each particular species of animals, which is so conspicuous in these and a thousand other instances, merits in an imminent degree the attention of the student of nature; as it exhibits the most unequivocal proof of a regular design and determinate plan in their formation, and evidently shews that the whole created system is the production of an intelligent and all powerful Being.

“ ———— Who spake the word
And Nature mov'd complete.”

Besides the subserviency of the animal creation to man, there can be no doubt that the happiness of the

creatures themselves constituted a principal object in the view of the Author of Nature. It must, however, be acknowledged that many animals exist of which we cannot perceive the utility. Many of them appear useless, and several of them noxious to man. Not a few of them likewise, especially among the reptile and insect kinds, seem destitute of enjoyment, and incapable of happiness. But, are we, my dear Sir, able to penetrate into the secret recesses of nature, to investigate the actions of every creature, to examine their consequences, and calculate how far they may be, if not directly and immediately, at least indirectly and ultimately beneficial to our species? Or, are we able exactly to estimate the felicity of animals, or to explore the whole circle of their pleasures? Hither our inquiries cannot reach.

“————— Here the cloud
So with eternal Providence, sits deep
Enough for us to know that this dark state
In wayward passions lost, and vain pursuits,
This infancy of Being cannot prove
The final issue of the works of God.”

In this present state of existence, my dear Sir, the limitation of our faculties prevents us from fully comprehending the wonders of the creation; this grand prerogative, this sublime enjoyment is certainly reserved for rational beings in a future and more happy state, when the mind, invigorated and expanded, having all its powers renovated and improved, shall be capable of boundless excursions, and of seeing the image of the Deity clearly reflected from his works.

In our present state of being, in which we see the mysteries of Nature and of Providence as it were but dimly through the veil that hangs before our eyes, Reason, that inestimable gift of the Divinity, is sufficiently illuminating to convince us that we can only see by parts, and those parts but imperfectly; while the supreme intellect embraces in one comprehensive view the whole system of Creation, and that whatever is the work of infinite Wisdom is destined to

some useful and beneficial end. If we examine a complex piece of mechanism, and observe the regularity of its operations and movements, although we may not perhaps comprehend the utility of each part, and the particular action of each wheel or spring, yet in considering that from the motions of the whole machine some great effect is produced, we shall readily conclude that none of its parts are useless.

These observations, my dear Sir, and a number of others which naturally result from a survey of the creation, have an evident tendency to improve the mind and ameliorate the heart. They all concur to illuminate the understanding, and to inspire the most exalted sentiments of morality and religion; to instruct the ignorant, to check presumption, and confound Atheism.

The volume of Nature, my dear Sir, is the Book of God, ever open to the eyes of mankind.

In contemplating "the whole magnificence of Heaven and Earth," with all the numerous and varied assemblage of beings that people the immense and superb mansion, we every where view the reflection of his glory. All things, animate and inanimate, in perfect unison, and in language more emphatical than that of words proclaim,

"THE HAND THAT MADE US IS DIVINE."

END.

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